



CITY OF CARLISLE.

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# REPORT

ON THE

## Sanitary Condition of the City of Carlisle

FOR THE YEAR 1920,

BY

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TO THE CHAIRMAN AND MEMBERS OF THE HEALTH  
COMMITTEE.

I have the honour to submit the following report on the health of the City during the year 1920.

**POPULATION.**

Census, 1911	...	...	...	...	46,432
As extended, November 9th, 1912	...				52,225

The estimated population of the City, calculated by the usual method to the middle of the year, is 53,095, but, as I pointed out in my last report, this estimate is probably too low, the estimate of the civilian population supplied by the Registrar-General, viz., 57,697, probably being more accurate.

The following table shows the estimated population for the past five years, as calculated by the usual method, and the estimates of the civilian and total populations supplied by the Registrar-General, compared with the figure obtained at the Census of the City taken in 1917 and the number of ration cards issued during the years 1918 and 1919:—

	Population.				
	1916	1917	1918	1919	1920
Estimated by usual method	52,719	52,813	52,907	53,001	53,095
Registrar-General's Estimate					
} Civilian Population	49,721	53,064	53,717	55,198	57,397
} Total Population	54,097	59,151	60,188	57,500	57,697
No. of Ration Cards Issued	...	...	54,263	55,737	...
Census of City 1917	..	56,437	...	...	...

It will be impossible to obtain an accurate knowledge of the population of the City until the Census enumeration has been carried out, the preliminary figures relating to which will be available in the autumn.

AREA OF THE CITY—					Acres.
Before Extension of the City Boundary, 1912					2,025
After Extension	...	...	...	...	4,488

#### DENSITY OF POPULATION—

No. of persons per acre (1912)	...	...	11.8
„ „ (1920)	...	...	12.8
No. of persons per house (census 1911)	...	...	4.4

### BIRTHS.

The number of births registered during the year was 1,425, an increase of 359 over the figure for the previous year.

A marked increase in the number of births was observed during the last quarter of 1919, when 305 births were registered. This increase continued and attained its maximum of 377 during the first quarter of last year, since when there has been a decline. The number of births during the year was 297 above the average for the previous ten years. This large increase was due principally to the rapid demobilisation during 1919. The number of births is the largest ever recorded in the City, the previous maximum being 1,389 during the year 1893. The total number of births registered during the year is, however, 25 less than the number notified in accordance with the provisions of the Notification of Births Act, as the births of a number of children born during the last six weeks of the year had not been registered before 31st December.

Calculated on the estimate of the total population supplied by the Registrar-General, viz., 57,697, the number of births per 1,000 of the population at all ages is 24.7, an increase of 6.2 per 1,000 upon the figures for the year 1919, and the highest recorded since 1906, when the rate was 25.3 per 1,000.

The birth-rate for the whole of England and Wales during 1920 was 25.4 per 1,000. The rate for the 96 great



towns, to which classification Carlisle belongs, was 26.2 per 1,000, and for the 148 smaller towns of England and Wales, 24.9 per 1,000.

Year.	Number of Births Registered.			Per 1,000 of the population.
	Males.	Females.	Total.	
1911	563	546	1109	23.8
*1912	601	541	1142	24.6
1913	569	595	1164	22.1
1914	629	580	1209	23.0
1915	604	588	1192	22.6
1916	546	557	1103	20.3
1917	531	586	1117	18.8
1918	524	509	1033	17.1
1919	557	509	1066	18.5
1920	759	666	1425	24.7

\* Old City.

759 of the children born were males and 666 females, the proportion of males to females being 1,123 to 1,000.

The ratio of males to females is exceptionally high. An increase in the ratio was observed in 1919, when it was 1,094, the usual ratio being about 1,040 males to 1,000 females. It has been previously observed that the proportion of males to females born has increased after great wars, and the experience of the past two years has confirmed this observation, but, so far as I am aware, no satisfactory explanation has so far been put forward.

The births and deaths registered during the year have been allocated to the various wards of the City, but as there is at present no reliable information as to the population of the various wards, it is not possible to give the birth and death-rates for the various wards separately.

Table showing details of the Births in the  
several Wards, 1920.

QUARTER ENDING.	STANWIX AND ETTERBY.	RICKERGATE.	AGLIONBY.	GREYSTONE.	ST. NICHOLAS.	CURROCK.	DENTON HOLME.	ST. CUTHBERT'S.	CALDEWEGATE.	NEWTOWN AND BELLE VUE.	TOTALS FOR CITY.
March 31 .....	11	27	30	35	50	37	65	38	53	31	377
June 30.....	13	49	33	32	46	28	44	49	44	22	360
September 30 ..	12	31	30	39	36	33	45	33	54	29	342
December 31.....	7	35	36	44	43	24	42	39	56	20	346
Totals... ..	43	142	129	150	175	122	196	159	207	102	1425

### ILLEGITIMATE BIRTHS.

The number of illegitimate births registered during 1920 was 84, or 58.9 per 1,000 of the total births.

The number of illegitimate births registered shows a decrease of 10 upon the figure for 1919.

Upon investigation I find that in 10 instances, or 11.9 per cent. of the total illegitimate births for the year, the mother was not a resident of the City.

The distribution of the illegitimate births among the several wards was as follows:—

	Stanwix and Etterby	Rickergate	Aglionby	Greystone	St. Nicholas	Currock	Denton Holme	S. Cuthbert's	Caldewgate	Newtown & Belle Vue	Totals for City
Males	...	8	3	4	6	3	2	5	7	5	43
Females	1	6	5	4	4	4	7	4	5	1	41
Total	1	14	8	8	10	7	9	9	12	6	84

## DEATHS.

The total number of deaths registered during 1920 was 785, as compared with 778 in 1919. 37 deaths occurred of persons belonging to the City in institutions and other places outside, while the deaths of 117 persons not belonging to the City occurred in public institutions and other places within the City. Excluding these 117 deaths, and substituting the 37 deaths of Carlisle residents occurring in other districts, a nett figure of 705 remains. This gives a nett death-rate of 12.3 per 1,000, or a standardised death-rate of 12.5 per 1,000 of the civil population at all ages, based upon the estimated civil population supplied by the Registrar-General, viz., 57,397.

**Table showing details of the corrected Deaths  
in the several Wards, 1920.**

Quarter Ending	Stanwix and Etterby	Rickergate	Aglionby	Greystone	St. Nicholas	Currock	Denton Holme	S. Cuthbert's	Caldewgate	Newtown & Belle Vue	Totals for City
March 31	9	15	22	18	22	21	25	20	25	12	189
June 30	8	22	23	31	32	12	22	27	27	13	217
September 30	9	17	14	9	9	9	9	17	24	10	127
December 31	8	17	20	26	21	18	22	14	15	11	172
Totals	34	71	79	84	84	60	78	78	91	46	705

**Table showing the number of Deaths at all  
Ages and at several Age periods.**

	All Ages.	Under 1 Year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and up- wards.
No. of Deaths at all ages and at several age periods	705	114	49	23	50	257	232



The following is a list of the deaths of persons not belonging to the district occurring in public institutions and other places within the City:—

Cumberland Infirmary	...	...	...	65
Private Nursing Homes	...	...	...	26
Private Houses	...	...	...	17
Fusehill Hospital	...	...	...	4
Fever Hospital	...	...	...	1
Harraby Hill House	...	...	...	1
Shaddon Works	...	...	...	1
Railway Train	...	...	...	1
Military Hospital, The Castle	...	...	...	1
				<hr/> 117 <hr/>

### INQUESTS.

During the year the City Coroner held 38 inquests.

Of this number 26 were held upon the bodies of persons who had been resident within the city, and 12 upon the bodies of persons who resided in other districts, but who died within the city.

Four related to children under 5 years of age, and in one instance the infant was under 1 year.

The verdict of the Jury and the ages in the four cases respectively were:—

Cause.	Age.
Accidentally suffocated by being overlaid in bed ...	21 days
Wilfully murdered by his father whilst insane ...	2 years
Accidentally drowned .. ...	2 years
Shock, the result of burns accidentally received ...	3 years



The following table shows the diseases causing the largest number of Deaths during 1920, and a comparison with those of 1919.

DISEASE.	1919.	1920.	Increase or Decrease
Pulmonary Tuberculosis & Phthisis ...	46	36	—10
Other forms of Tuberculosis ...	16	15	— 1
Pneumonia ... ..	46	53	+ 7
Other Diseases of Respiratory System ...	57	66	+ 9
Measles ... ..	11	4	— 7
Influenza ... ..	38	28	—10
Whooping Cough ... ..	1	10	+ 9
Diphtheria, Membranous Croup ...	5	2	— 3
Disease of Heart and Blood Vessels ...	174	149	—25
Rheumatic Fever, Chronic Rheumatism, Rheumatoid Arthritis .. ...	5	5	...
Cancer and Malignant Disease ...	49	62	+ 13
Diseases of Digestive System other than Diarrhoea and Enteritis ... ..	16	29	+ 13
Diseases of Urinary System ... ..	24	33	+ 9
Diseases of Nervous System ... ..	31	24	— 7
Prematurity and Injury at Birth, &c. ...	34	39	+ 5
Accidents due to Negligence ..	12	18	+ 6
Diarrhoea and Enteritis . ...	18	19	+ 1

+ Shows an increase in the number of deaths.

— Shows a decrease in the number of deaths.





Table showing details of the Number and Nature of all Deaths of  
Persons belonging to the City during the year—continued.

CAUSE OF DEATH.	AGES.											Totals.	
	0 to 1	1 to 2	2 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85		85 and upwards
II.—LOCAL DISEASES—continued.													
Aneurism ... ..	...	...	...	...	...	...	...	...	1	...	...	...	2
Blood Vessels, other Diseases...	...	...	...	...	...	...	...	...	...	8	6	1	15
Diseases of Respiratory Organs.													
Bronchitis ... ..	5	5	2	...	...	...	4	11	17	...	9	1	54
Emphysema, Asthma ...	...	...	...	...	...	1	...	2	...	...	...	...	3
Pleurisy ... ..	1	...	1	1	1	...	...	...	...	...	1	...	5
Respiratory Diseases, other	...	...	...	...	1	1	...	1	...	...	...	1	4
Diseases of Digestive System.													
Mouth, Pharynx, Disease (not specific) ... ..	...	...	...	...	...	...	...	...	...	...	...	...	1
Gastric Ulcer ... ..	...	...	...	...	...	1	...	...	...	...	...	...	1
Gastritis, Gastric Catarrh	3	...	...	...	...	1	2	1	...	...	...	...	7
Stomach, other Diseases (not malignant)	...	...	...	...	1	...	...	...	...	...	...	...	1
Enteritis (not Epidemic)	5	2	...	...	...	1	...	...	...	...	...	...	9
Gastro-Enteritis ... ..	5	2	...	...	...	...	...	...	...	...	...	...	7
Appendicitis, Perityphlitis	1	...	...	...	1	...	1	...	...	...	...	...	3
Hernia ... ..	...	1	...	...	...	...	...	1	...	...	1	...	3
Intestinal Obstruction ...	...	...	...	...	...	...	2	...	1	...	...	...	3
Other Diseases of Intestine	...	...	...	...	1	...	...	...	...	...	...	...	1
Peritonitis (not Puerperal)	...	...	...	...	...	...	1	...	...	...	...	...	3
Cirrhosis of Liver ... ..	...	...	...	...	...	...	...	...	1	...	...	...	1
Liver and Gall Bladder, other diseases ... ..	...	...	...	...	...	...	1	1	1	...	...	...	3
Digestive System, other Diseases	...	...	...	...	...	...	...	1	...	...	...	1	2
Lymphatic Diseases.													
Thyroid, Body Disease ...	...	...	...	...	...	...	...	1	...	...	...	...	2





The following table sets out the Cause and the Ages at Death of 705 persons belonging to the City.

CAUSES OF DEATH.				NETT DEATHS AT THE SUBJOINED AGES OF "RESIDENTS" WHETHER OCCURRING WITHIN OR WITHOUT THE DISTRICT.									TOTAL DEATHS WHETHER OF "RESIDENTS" OR "NON-RESI- DENTS" IN INSTITUTIONS IN THE DISTRICT.
				All Ages.	Under 1 year.	1 and under 2.	2 and under 5.	5 and under 15.	15 and under 25.	25 and under 45.	45 and under 65.	65 and up- wards	
1	2	3	4	5	6	7	8	9	10	11			
All Causes { Certified ... .. 687	111	26	21	23	30	83	168	225	217				
{ Uncertified .. .. 18	3	1	1	...	...	1	5	7	1				
Enteric Fever ... .. 1	...	...	...	...	...	...	1	...	...				
Smallpox ... .. 4	1	2	1	...	...	...	...	...	...				
Measles ... .. 10	5	2	2	1	...	...	...	...	...				
Scarlet Fever ... .. 2	...	...	2	...	...	...	...	...	...				
Whooping Cough ... .. 28	1	1	2	...	3	6	10	5	...				
Diphtheria and Croup ... .. 2	...	...	2	...	...	...	...	...	...				
Influenza ... .. 28	1	1	2	...	3	6	10	5	...				
Erysipelas ... .. 36	...	...	...	...	...	...	...	...	...				
Phthisis (Pulmonary Tuberculosis) ... 6	2	...	2	2	...	...	...	...	...				
Tuberculous Meningitis ... .. 9	...	1	...	3	1	3	...	1	4				
Other Tuberculous Diseases ... .. 62	...	...	...	1	...	6	27	28	30				
Cancer, Malignant Disease ... .. 3	...	...	...	...	1	1	1	...	...				
Rheumatic Fever ... .. 7	2	1	...	1	2	1	...	...	3				
Meningitis ... .. 79	...	...	...	2	2	2	31	42	5				
Organic Heart Disease ... .. 54	5	5	2	...	...	...	15	27	2				
Bronchitis ... .. 53	14	5	5	2	1	9	11	6	7				
Pneumonia (all forms) ... .. 12	1	...	1	...	1	4	3	2	1				
Other Diseases of Respiratory Organs... 19	12	4	...	...	...	1	2	...	...				
Diarrhoea and Enteritis ... .. 3	1	...	...	...	1	...	1	...	9				
Appendicitis and Typhlitis ... .. 1	...	...	...	...	...	...	...	1	...				
Cirrhosis of Liver ... .. 1	...	...	...	...	...	...	...	...	...				
Alcoholism ... .. 25	...	...	...	1	3	4	10	7	10				
Nephritis and Bright's Disease ... .. 3	...	...	...	...	1	2	...	...	2				
Puerperal Fever ... .. 5	...	...	...	...	1	4	...	...	1				
Other Accidents and Diseases of Preg- nancy and Parturition ... .. 57	56	1	...	...	...	...	...	...	12				
Congenital Debility & Malformation, including Premature Birth ... .. 19	1	...	3	3	...	7	3	2	13				
Violent Deaths, excluding Suicide ... 6	...	...	...	...	1	3	2	...	1				
Suicide ... .. 197	13	4	1	5	4	14	49	107	103				
Other Defined Diseases ... .. 4	...	...	1	...	...	1	1	1	...				
Diseases ill-defined or unknown ... ..	705	114	27	22	23	30	84	173	232	218			
Sub- Entries included in above figures	Cerebro-spinal Meningitis ... ..	...	...	...	...	...	...	...	...	...			
	Poliomyelitis ... ..	...	...	...	...	...	...	...	...	...			
	Typhus Fever ... ..	...	...	...	...	...	...	...	...	...			
	Lobar Pneumonia ... .. 8	1	...	...	...	2	3	2	1				
	Pneumonia not defined .. 23	5	3	1	1	...	5	7	5				

The following table shows the Vital Statistics for the whole City during 1920 and previous years.

YEAR.	Population estimated to Middle of each Year	BIRTHS.			TOTAL DEATHS REGISTERED IN THE DISTRICT.		TRANSFERABLE DEATHS.		NETT DEATHS BELONGING TO THE DISTRICT.			
		Uncorrected Number.	Nett.		Number.	Rate.	of Non-residents registered in the District.	of Residents not registered in the District.	Under 1 Year of age		AT ALL AGES.	
			Number.	Rate.					Number.	Rate per 1,000 Nett Births.	Number.	Rate.
1	2	3	4	5	6	7	8	9	10	11	12	13
1913	52,497	1164	1164	22.1	821	15.6	76	24	148	127.1	769	14.6
1914	52,530	1209	1209	23.0	848	16.1	69	22	148	122.4	801	15.2
+1915 {	52,625	1192	1192	22.6	994	18.8	72	31	172	144.3	953	18.1
+1916 {	50,036											
	49,721	1103	1103	20.3	850	17.0	93	24	112	101.3	781	15.7
	54,097											
+1917 {	59,151	1117	1120	18.9	826	15.5	101	46	119	106.5	771	14.5
	53,064											
+1918 {	60,188	1033	1037	17.2	921	17.1	120	49	131	126.8	850	15.8
	53,717											
+1919 {	57,500	1066	1078	18.7	778	14.1	112	54	115	107.9	720	13.6
	55,198											
+1920 {	57,697	1425	1417	24.7	785	13.7	117	37	114	80.0	705	12.3
	57,397											

† Registrar-General's estimates of population.

The following public and other Institutions are within the City :—

The Union Workhouse and its Infirmary.

The Cumberland Infirmary.

Carlisle Non-Provident Dispensary.

The Crozier Lodge Isolation Hospital.

Strathclyde House (Home for Incurables).

St. Joseph's Home (aged and infirm persons).

Chadwick Memorial (Industrial School).

Corporation Dispensary and School Clinic.

Corporation Maternity Hospital.



### Birth-rate, Death-rate, and Infantile Mortality in Carlisle since 1891.

Year.	No. of Births.	Birth- rate.	No. of Deaths.	Gross Death- rate.	Infantile Mor- tality.	Average Five Years.		
						Birth- rate.	Death- rate.	Infant Mortality.
1891	1207	30.8	789	20.1	137	31.8	20.1	142.6
1892	1213	30.5	805	20.2	123			
1893	1389	34.5	868	21.6	178			
1894	1315	32.0	780	19.2	133			
1895	1311	31.4	794	19.4	142			
1896	1246	29.6	753	18.2	137	29.9	19.5	146.6
1897	1324	30.8	811	19.4	134			
1898	1311	30.0	935	22.2	183			
1899	1300	29.4	818	19.2	145			
1900	1354	30.1	807	18.8	134			
1901	1246	27.3	810	17.8	129	26.7	17.9	131.0
1902	1245	27.0	856	18.5	117			
1903	1322	28.4	813	17.4	118			
1904	1278	26.7	933	19.7	152			
1905	1168	24.3	783	16.3	139			
1906	1227	25.3	811	16.7	132	23.6	15.1	127.5
1907	1178	23.8	848	17.1	143			
1908	1223	24.4	713	14.2	129			
1909	1149	22.6	735	14.5	123.6			
1910	1145	22.2	683	13.2	110.0			
1911	1109	23.8	776	16.7	145.0	23.2	17.1	128.2
1912	1142	24.6	813	17.5	102.4			
1913	1164	22.1	821	15.6	127.1			
1914	1209	23.0	848	16.1	122.4			
1915	1192	22.6	1027	19.5	144.3			
1916	1103	20.3	850	17.0	101.5	19.9	15.5	104.5
1917	1117	18.8	826	15.5	106.5			
1918	1033	17.1	921	17.1	126.8			
1919	1066	18.5	778	14.1	107.9			
1920	1425	24.7	785	13.7	80			



Birth-rate, Death-rate, and Analysis of Mortality during the Year 1920.  
(Populations estimated to the middle of 1920 have been used for the purposes of this Table.)

	BIRTH-RATE PER 1,000 TOTAL POPULATION.	ANNUAL DEATH-RATE PER 1,000 CIVILIAN POPULATION.*										RATE PER 1,000 BIRTHS.		PERCENTAGE OF TOTAL DEATHS.*			
		All Causes.	Enteric Fever.	Smallpox.	Measles.	Scarlet Fever	Whooping Cough	Diphtheria.	Influenza.	Violence.	Diarrhoea and Enteritis (under 2 years).	Total Deaths under One Year.	Deaths in Public Institutions.	Certified Causes.	Inquest Cases.	Uncertified Causes of Death.	
England and Wales*	25.4	12.4	0.01	0.00	0.19	0.04	0.11	0.15	0.23	0.48	8.3	80	24.3	92.2	6.6	1.2	
96 Great Towns, including London (Census Populations exceeding 50,000)	26.2	12.5	0.01	0.00	0.22	0.04	0.14	0.16	0.31	0.43	10.4	85	31.3	92.2	7.1	0.7	
148 Smaller Towns (Census Populations 20,000—50,000)	24.9	11.3	0.02	0.00	0.19	0.03	0.10	0.14	0.27	0.38	7.8	80	16.5	93.2	5.3	1.5	
London ...	26.5	12.4	0.01	0.00	0.22	0.05	0.17	0.22	0.30	0.47	9.5	75	46.8	91.2	8.6	0.2	
Carlisle†	24.7	12.5	0.01	0.00	0.07	0.00	0.17	0.03	0.49	0.43	11.2	80	27.7	93.9	3.6	2.5	

\* Non-civilians are included in these figures for England and Wales but not for other areas.

† Population estimated by the Registrar-General—

For Birth-rate	...	...	...	57,697
And for Civilian Death-rate	...	...	...	57,897

## MORTUARY.

During 1920, 10 bodies were removed to the Public Mortuary, a post-mortem examination being performed in each instance.

## UNCERTIFIED DEATHS.

During the year eighteen deaths were registered of persons belonging to the city in which no certificate was given by a medical man, and in which no inquest was held.

During 1919, 23 such deaths were registered.

The 18 deaths in question were registered as being due to the following causes :—

	Sex.	Age.	Cause of Death as Registered.
1	Male	*3 months	Premature Birth. Marasmus
2	Female	*5 months	Convulsions
3	Male	*10 months	Heart Failure following Gastro-Enteritis
4	Female	17 months	Convulsions
5	Female	2 years	Whooping Cough
6	Male	69 years	Bronchitis and Heart Disease
7	Male	44 years	Cerebral Hæmorrhage
8	Female	63 years	Cerebral Hæmorrhage
9	Male	59 years	Spinal Ailment
10	Female	55 years	Apoplectic Fit
11	Male	55 years	Degeneration of the Heart
12	Male	62 years	Cardiac Disease
13	Female	66 years	Valvular Disease of the Heart
14	Male	67 years	Heart Failure
15	Male	70 years	Heart Attack
16	Male	75 years	Heart Disease
17	Female	76 years	Cardiac Failure
18	Female	80 years	Senile Decay. Chronic Intestinal Obstruction

\*It will be observed that three of the deaths were infants under one year of age.

## CANCER.

The following figures include all deaths from causes coming within the general term cancer. The number of deaths registered during 1920 was 62, as against 49 in the year 1919.

Calculating the 62 cases upon the Registrar-General's figures of 57,397, a mortality rate of 1·08 per 1,000 at all ages is obtained.

Table of Deaths from Cancer, 1911 to 1920.

Age.	Numbers.									
	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920
1 to 5 years ...	1	...	1	...	...	...	...	...	...	...
5 to 15 years ...	2	...	1	...	...	...	...	1	...	1
15 to 25 years ...	2	3	...	...	1	1	1	1	...	...
25 to 35 years ...	5	2	1	2	...	2	1	1	2	1
35 to 45 years ...	5	6	5	10	3	6	7	5	...	5
45 to 55 years ...	6	18	11	10	7	17	10	13	9	15
55 to 65 years ...	11	18	25	20	21	21	32	21	19	12
65 to 75 years ...	7	10	14	16	20	18	14	17	15	17
75 & upwards ...	6	5	5	10	6	9	8	7	4	11
Totals ...	45	62	63	68	58	74	73	66	49	62



RAINFALL.

Observations taken at the Carlisle Cemetery by J. T. Charlton, Esq.

MONTHS.	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920.		Average for 10 years 1910-1919.
											Rainfall, in.	Number of days on which Rain fell.	
January	in. 2.73	in. 1.04	in. 1.45	in. 2.17	in. 2.64	in. 3.17	in. 3.55	in. 1.53	in. 3.13	in. 2.88	in. 4.17	23	in. 2.43
February	4.04	3.62	1.39	1.27	2.59	3.56	3.31	1.13	2.86	1.05	2.16	16	2.48
March	1.25	1.33	3.81	3.37	2.67	1.88	2.14	1.98	0.66	2.35	3.11	20	2.14
April	1.69	2.75	0.42	2.77	1.36	1.91	2.44	2.45	0.50	1.49	2.17	22	1.78
May	2.07	2.32	1.81	1.78	1.73	2.04	2.98	1.91	1.88	1.10	3.48	20	1.96
June	1.53	3.79	4.13	2.40	1.06	1.15	3.30	2.01	0.87	2.66	2.11	10	2.33
July	3.76	0.69	1.83	1.12	3.04	3.80	4.61	1.31	3.73	0.87	4.26	28	2.48
August	4.28	2.20	4.47	2.17	2.73	3.27	2.39	5.64	3.21	2.96	2.50	15	3.33
September	0.38	2.16	2.22	2.11	1.28	1.03	2.06	2.61	7.36	1.81	1.89	15	2.30
October	1.68	2.23	2.10	2.51	1.11	1.25	5.10	4.33	4.00	2.36	1.00	9	2.67
November	3.61	3.34	2.65	3.40	4.52	0.58	4.34	2.83	2.01	2.36	2.02	17	2.96
December	2.62	4.73	3.73	2.46	3.58	4.64	2.75	1.40	3.44	3.32	2.79	16	3.27
Totals ...	29.64	30.20	30.01	27.53	28.31	28.28	38.97	29.13	33.65	25.21	32.11	211	30.13
Total number of days on which Rain fell {	197	181	217	194	201	183	228	176	190	191	...	...	196

Observations by W. Eggleston, Esq., upon the rainfall at Denton Holme Allotment Gardens, taken weekly with a gauge of 5 inches 2 feet above the ground level, and 57 feet above sea level, show that during the year 28.58 inches of rain fell, giving a weekly average of 0.55 inches. There was no week without rainfall. The driest month of the year was October, with a rainfall of 1.00 inch, the wettest being January, with a rainfall of 3.17 inches.

Evaporation gauged from an open vessel 2 feet above the ground level during the year was 28.12 inches, the greatest evaporation taking place during the month of June, viz., 6.89 inches; the lowest during the month of December, viz., 0.45 inches. The weekly average evaporation was 0.54 inches.





## WATER SUPPLY.

The chemical and bacteriological results of quarterly samples are given in the following pages, together with the results of a special examination as to the action of the water upon lead.

### Reports on Samples of Water from Domestic Tap. BACTERIOLOGICAL EXAMINATION BY PROF. DELÉPINE, MANCHESTER.

QUANTITATIVE ANALYSIS.		1920.									
A Aerobic micro-organisms growing for 3 days in nutrient gelatine at 20° C to 21° C.		Number of colonies in one gramme of water.					No. of kinds clearly recognisable.				
		JAN.	APL.	JULY.	OCT.	DEC.	JAN.	APL.	JULY.	OCT.	DEC.
Non-Liquefying Bacteria ...	6	11	1	6	57	8	2	1	1	3	3
Liquefying Bacteria ...	2			1	10	3	2		1	4	3
Other Micro-Organisms ...	3			3	1	...	1		1	...	...
B Anærobic Micro-Organisms ...	...	...	...	...	...	...	...	...	...	...	...

  

QUALITATIVE ANALYSIS.		1920.				
A Bacteria associated with sewage or faecal pollution		JAN.	APRIL.	JULY.	OCT.	DEC.
		B. Coli communis found in 100 C.C. but not in 15 C.C.	B. Coli communis not found in 100 C.C.	B. Coli communis not found in 100 C.C.	B. Coli communis not found in 100 C.C.	B. Coli communis found in 100 C.C. but not in 15 C.C.
B Bacteria associated with disease		Not found.	Not found	Not found	Not found	Not found

Professor Delépine, in his observations on the sample of water submitted for bacteriological examination in December, 1919, stated that "the sample of water shows evidence of very slight pollution, probably accidental." A further sample, taken with strict precautions against contamination, was sent in January of last year, and the result of the analysis was very similar, Professor Delépine again observing that there was evidence of very slight pollution. The other four samples submitted during the year were found to be very satisfactory.

CHEMICAL ANALYSIS BY Messrs. HELLON & MANN,  
WHITEHAVEN.

Results shown in grains  
per gallon.

1920

CHEMICAL.	MARCH.	JUNE.	SEPT.	DEC.
Total Solid Matter in solution dried at 212° Fahr. ... ..	8.120	9.240	7.840	8.120
Chlorine existing as Chlorides ... ..	.525	.525	.490	.490
Ammonia ... ..	Nil	Nil	.001	traces
Albuminoid Ammonia	.001	.001	.004	.001
Nitrogen existing as Nitrates ... ..	Nil	Nil	traces	traces
Oxygen absorbed in 15 minutes at 80° Fahr.	.041	.031	.053	.068
Oxygen absorbed in 4 hours at 80° Fahr. ...	.079	.070	.102	.131
Lead & other Poisonous Metals ... ..	Nil	Nil	None	None
Hardness before boiling	7°	7 $\frac{1}{4}$ °	5 $\frac{1}{2}$ °	6°
Hardness after boiling	1 $\frac{1}{2}$ °	1 $\frac{1}{4}$	$\frac{1}{2}$ °	$\frac{3}{4}$
Appearance in two-foot tube ... ..	Clear yellowish-green	Clear greenish-blue	Clear greenish-yellow	Clear greenish-yellow
Smell when heated to 100° Fahr. ...	None	None	None	None
Microscopical Examination ... ..	Slight deposit of Vegetable debris	Slight deposit of Vegetable debris	Slight deposit of Vegetable debris	Slight deposit of Vegetable debris



A determination of the plumbo-solvent action of the water was made according to the method of the Local Government Board in all samples taken during the year, with the following results :—

Lead dissolved at 10° C—

Results stated in parts per 100,000.

	1st	2nd	3rd	4th	5th	Average.
APRIL	50 c.c.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	
	.04	.04	.04	.04	.04	.04

Lead dissolved at 15° C—

	1st	2nd	3rd	4th	5th	Average.
JUNE	50 c.c.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	
	.03	.03	.03	.03	.03	.03

Lead dissolved at 14.5° C—

	1st	2nd	3rd	4th	5th	Average.
SEPT.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	
	.06	.08	.06	.06	.06	.06

Lead dissolved at 8.5° C—

	1st	2nd	3rd	4th	5th	Average.
DEC.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	50 c.c.	
	.04	.04	.04	.04	.04	.04

The Lacmoid re-action in all instances was Alkaline.

**Total annual distribution of Water from Cumwhinton covered reservoir during the years 1914 to 1920.**

Year.	Number of Gallons.	No. of Gallons per head, per day.
1914	690,410,000	33.34
1915	710,974,000	34.03
1916	758,483,000	35.80
1917	801,490,000	33.78
1918	795,220,000	34.58
1919	804,040,000	34.88
1920	814,170,000	35.41

## DRAINAGE AND SEWERAGE.

Every street in the old City is sewered. The original scheme was laid out by Mr. (afterwards Sir) Robert Rawlinson, and has been extended from time to time as required and brought up to date.

During the year an extension of the system of sewers in Harraby, which was included in the City in 1912, was commenced and is now well advanced. It is hoped that during the coming year the sewers will also be extended so as to drain Upperby and Belle Vue, and that the two low-lying parts of Stanwix, viz., Eden Terrace and St. Martin's Lane, will also be connected with the system of sewers.

The sewage works have continued to work satisfactorily, and are ample to deal with all the sewage and storm-water conveyed to them.

## CLOSET ACCOMMODATION.

About 130 privies still exist in the outlying parts of the City which were added in 1912, most of which will be replaced by water-closets when the proposed extensions to the sewers are completed.

## SCAVENGING.

There are no cesspools in the City.

There are no ashpits in the City, portable receptacles for the collection of house refuse having been in use for the past twenty years, and house refuse is removed regularly from all premises in the City. From the centre of the City the refuse is removed daily, and from the outlying areas twice weekly.

The refuse is tipped into old clay pits or used to make up low-lying land near the river. The tips are covered with soil and no nuisance arises from this method of disposal.

There is a small one-cell destructor, in which offal from the slaughter-houses and other refuse liable to cause a nuisance is incinerated.

## FOOD.

### Milk Supply.

The fresh milk consumed in the City, which lies in the centre of an extensive agricultural district, is produced either within the City boundaries or in the immediately adjacent district, and is brought into the City once or twice daily.

There are 26 registered cowkeepers in the City, who have 45 cowsheds, in which an average of 329 cows were kept during the year, and 12 registered milk sellers.

All the cowsheds and dairies in the City are regularly inspected by the Sanitary Inspectors, who paid 206 visits for this purpose during the year.

All cows purchased by cowkeepers within the City are purchased subject to examination by the Veterinary Inspector, and any found to be unsatisfactory are returned to the sellers. 221 newly-purchased cows were examined by the Veterinary Inspector during the year, 10 of which were unsound and were returned to the sellers. The cows kept within the City are regularly examined by the Veterinary Inspector, who made 4,244 examinations during the year. 18 cows were found to be suffering from various ailments. The milk from 15 of these animals was destroyed until the animal recovered, while the remaining 3 animals were removed from the herds on the advice of the Veterinary Inspector and were slaughtered.

Eight samples were taken of milk being brought into the City from outside dairies and were submitted for bacteriological examination for the presence of tubercle bacilli, but no bacilli were found in any of the samples.

Fifty-two samples of milk were taken for analysis during the year, and with the exception of a series of five samples from one farm, all were found to comply



with the standard laid down by the Regulations. The five samples, one of which was an "appeal to the cow" sample, were somewhat deficient in non-fatty solids, and were probably of poor quality due to unsatisfactory feeding. No action was taken.

### Public Health (Milk and Cream) Regulations, 1912 and 1917.

As all the milk retailed in the City is sold within 12-24 hours of production, dealers are not tempted to add preservatives to it. Fifty-two samples of milk were examined for the presence of preservatives, but in no instance was any preservative found.

#### 1. Milk; and Cream not sold as Preserved Cream.

		Number of samples examined for the presence of a preservative.		Number in which preservatives were reported to be present.
Milk	...	52	...	Nil
Cream	...	Nil	...	Nil

#### 2. Cream sold as Preserved Cream.

It was only during the last month of the year that preserved cream was exposed for sale in the City. No samples were taken for analysis during the year.

### MEAT.

There are two licensed private slaughter-houses in the City, which are owned by the Railway Companies. These slaughter-houses are only used during certain periods of the year for the slaughter of lambs for sale at Smithfield Market, London.

All other animals slaughtered within the City are killed at the Corporation Abattoir, which has been open since 1893. All carcasses are inspected by the Slaughter-house Superintendent during slaughtering, and any carcase which is not entirely satisfactory is detained for

further examination by the Chief Sanitary Inspector. Practically all carcasses or parts of carcasses which are considered unfit for consumption are surrendered voluntarily for destruction.

Casualty carcasses sent from the surrounding districts to the public abattoir with a view to sale for human consumption are carefully inspected before permission is given for them to be offered for sale in the City.

The following Table gives particulars of Animals killed, Carcasses examined, and particulars of Carcasses unfit for human food.

Animal	Total number of animals slaughtered and examined	Number of carcasses specially referred for examination	Number in which the whole carcass was unfit for human food	Number in which a portion of a carcass was unfit for human food	Number affected with Tuberculosis.	
					Whole carcass condemned	Part of carcass condemned
Oxen	2,930	106	72	33	43	15
Sheep	35,862	73	39	33	...	...
Calves	838	15	14	1	4	...
Pigs	2,462	2	1	1	...	...
<i>Imported</i> Oxen	...	...	...	...	...	...
Sheep	...	3	3	...	...	...
Totals	42,092	199	129	68	47	15

### OTHER FOODS.

Information concerning unsound food, food inspection, bakehouses, &c., and the work under the Sale of Food and Drugs Acts, is given on pages 101 to 104 of the Report of the Sanitary Inspector.

## INFECTIOUS DISEASES.

The City has been comparatively free from infectious diseases during the year. 452 notifications were received during the year, 135 of which related to various forms of tuberculosis and 317 to other infectious diseases.

Summary of notifications:—

Pulmonary Tuberculosis	...	...	...	111
Scarlet Fever	...	...	...	70
Ophthalmia Neonatorum	...	...	...	56
Acute Primary Pneumonia	...	...	...	39
Erysipelas	...	...	...	36
Acute Influenzal Pneumonia	...	...	...	35
Diphtheria	...	...	...	35
Malaria	...	...	...	31
Non-Pulmonary Tuberculosis	...	...	...	24
Puerperal Fever	...	...	...	9
Acute Poliomyelitis	...	...	...	2
Enteric Fever	...	...	...	2
Dysentery	...	...	...	1
Acute Encephalitis	...	...	...	1
				452

During the year 71 deaths of residents in the City were registered as being due to infectious diseases, viz. :—

Pulmonary Tuberculosis	...	...	...	36
Non-Pulmonary Tuberculosis	...	...	...	15
Whooping Cough	...	...	...	10
Measles	...	...	...	4
Puerperal Fever	...	...	...	3
Diphtheria	...	...	...	2
Paratyphoid Fever	...	...	...	1
				71

The number of deaths certified as due to the seven principal Zymotic diseases was 20, equal to a Zymotic death-rate of 0.35 per 1,000 of the estimated population of the City. In the previous year 17 deaths were due to Zymotic diseases, equivalent to a Zymotic death-rate of 0.3 per 1,000.



Table showing the Age and Seasonal Incidence of the various Infectious Diseases notified during 1920.

	Number of Cases Notified at various Ages.							Number of Cases notified in each Month.												Total number of cases notified	Number of cases in- correctly notified	Nett number of cases notified	Number of cases removed to hospital
	Under 1 year	1—5 years	5—15 years	15—25 years	25—45 years	45—65 years	65 and up-wards	January	February	March	April	May	June	July	August	September	October	November	December				
Scarlet Fever	1	10	47	10	2	..	..	3	2	5	5	5	10	5	6	9	5	10	5	70	3	67	47
Diphtheria ..	..	8	20	4	3	..	..	5	5	4	4	2	7	2	1	..	1	2	20	35	5	30	20
Enteric Fever	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	1
Puerperal Fever	..	..	..	2	7	..	..	2	3	2	1	..	..	1	..	2	..	..	..	9	2	7	..
Erysipelas ..	..	1	1	7	17	1	1	7	1	4	2	1	1	2	2	2	7	3	4	36	..	36	1
Malaria ..	..	..	..	5	25	..	..	4	3	1	2	2	5	2	5	3	2	..	2	31	..	31	..
Dysentery ..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	1	1	..	2
Acute Primary Pneumonia	1	5	7	5	13	8	..	6	1	10	4	6	2	1	..	2	2	3	2	39	..	39	7
Acute Influenzal Pneumonia	3	4	5	5	11	7	..	..	1	2	3	13	8	..	..	1	..	4	3	35	..	35	..
Acute Encephalitis	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Encephalitis Lethargica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Poliomyelitis	1	1	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	2	1	1	..
Ophthalmia Neonatorum	56	..	..	..	..	..	..	8	7	9	11	1	5	3	1	3	2	2	4	56	2	54	..
Pulmonary Tuberculosis	..	2	31	22	41	13	2	15	8	11	4	10	7	3	7	7	10	15	14	111	..	111	..
Other forms of Tuberculosis	..	3	14	1	6	..	..	1	1	2	1	4	2	1	3	..	4	2	3	24	..	24	..

Table showing the number of Cases of, and Deaths from, Notifiable Infectious Diseases occurring in the various Wards of the City, 1920.

	Stanwix		Ricker- gate		Aglionby		Grey- stone		St. Nicholas		Currock		Denton Holme.		St. Cuthberts		Caldew- gate		Newtown and Belle Vue		Carlisle	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Scarlet Fever	2	..	9	..	9	..	11	..	11	..	3	..	9	..	1	..	3	..	12	..	70	..
Diphtheria	2	..	4	..	1	..	5	..	10	..	1	..	3	..	3	..	1	..	5	..	35	..
Enteric Fever	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	2	..	..
Puerperal Fever	1	..	1	..	1	..	1	..	1	..	..	..	2	..	..	..	1	..	..	..	9	..
Erysipelas	3	..	5	..	1	..	5	..	1	..	2	..	6	..	..	..	5	..	2	..	36	..
Malaria	..	..	3	..	..	..	1	..	4	..	3	..	8	..	..	..	6	..	1	..	31	..
Dysentery	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..
Acute Primary Pneumonia	4	1	2	..	1	..	7	1	8	1	3	2	1	..	7	1	3	..	3	1	39	7
Acute Influenzal Pneumonia	2	..	..	1	1	..	6	3	6	5	..	..	6	2	6	2	2	..	6	2	35	15
Acute Encephalitis	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..
Encephalitis Lethargica	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Polionmyelitis	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	2	..	..
Ophthalmia Neonatorum	1	..	4	..	1	..	6	..	7	..	2	..	8	..	7	..	12	..	8	..	56	..
Pulmonary Tuberculosis	3	1	10	3	10	3	16	6	8	2	13	4	17	5	12	5	11	7	11	2	111	36
Other forms of Tuberculosis	..	1	1	2	2	2	5	3	3	2	2	1	7	3	..	..	3	..	1	2	24	15

Table showing the number of Cases of Notifiable Diseases recorded in the City, and the number of deaths from each during the past 8 years.

	1913		1914		1915		1916		1917		1918		1919		1920	
	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths	No. cases	Deaths
Smallpox .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Scarlet Fever .....	159	9	250	9	562	10	225	6	30	3	38	...	41	2	70	...
Diphtheria .....	52	...	44	3	68	12	153	28	98	13	62	6	51	5	35	...
Enteric Fever .....	5	...	2	...	1	...	3	...	1	1	1	...	1	...	2	1
Typhus Fever .....	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...
Continued Fever .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Puerperal Fever .....	1	1	1	...	1	...	4	2	1	1	...	...	1	...	9	3
Erysipelas.....	51	...	57	...	72	...	45	1	64	1	38	1	63	1	36	...
Measles .....	*	3	*	2	*	35	60	1	1796	12	420	6	1307	11	*	4
German Measles .....	*	...	*	...	*	...	22	...	404	6	...	...	5	...	*	...
Cerebro-Spinal Fever .....	*	...	*	...	*	...	...	...	3	2	1	1	...	...	...	...
Polomyelitis .....	3	1	2	...	3	1	3	...	1	...	...	...	2	...	2	...
Encephalitis Lethargica.....	*	...	*	...	*	...	*	...	*	...	*	...	2	...	...	...
Malaria .....	*	...	*	...	*	...	*	...	*	...	*	...	31	...	31	...
Dysentery .....	*	...	*	...	*	...	*	...	*	...	*	...	3	...	1	...
Acute Primary Pneumonia.....	*	...	*	...	*	...	*	...	*	...	*	...	29	1	39	7
Acute Influenzal Pneumonia.....	*	...	*	...	*	...	*	...	*	...	*	...	58	10	35	15
Ophthalmia Neonatorum ..	*	...	20	...	10	...	8	...	17	...	21	...	34	...	56	...
Acute Encephalitis .....	*	...	*	...	*	...	*	...	*	...	*	...	...	...	1	...
Pulmonary Tuberculosis....	351	71	231	70	194	80	167	66	103	72	109	48	102	46	111	36
Other forms of Tuberculosis .....	96	25	56	32	56	26	49	29	30	24	28	19	25	16	24	15

\* Indicates that the disease was not notifiable during the year.



## SCARLET FEVER.

For the fourth year in succession the City has been fortunate in having an extremely low incidence of this disease, six years having passed since the last extensive epidemic of scarlet fever occurred, with the result that there must now be a large population of young children susceptible to the disease, among whom it will doubtless spread very rapidly should an epidemic occur.

During the year 70 cases of scarlet fever were notified, an increase of 29 on the number notified during the previous year, the incidence of the disease being slightly higher during the later part of the year. The cases occurred in all parts of the City, and there was no evidence of localised spread of infection.

Six cases occurred in the Cumberland Infirmary. The patients in four instances did not belong to the City.

Two patients, aged 22 and 32 respectively, were removed from the Infirmary to the Isolation Hospital, and both died the day after admission. In each instance there was a history that the patient had been operated upon a day or two previously, and death was due to some acute septic condition accompanied by a scarlatinaform eruption.

One child was notified as suffering from diphtheria, but the diagnosis was later amended to one of scarlet fever.

Forty-seven persons, or 67 per cent., suffering from the disease were removed to the Isolation Hospital.

Table showing the number of notifications, number of cases isolated, number and percentage of deaths from scarlet fever during the years 1911-1920.

Year.	No. of cases notified.	No. of cases isolated in Hospital.	Average period in Hospital (days).	No. of return cases.	No. of deaths.	Deaths per 100 cases.
1911	139	104	42.8	3	2	1.4
1912	110	101	42.3	2	2	1.8
1913	164	131	44.2	4	0	0.0
1914	251	196	51.1	10	9	3.6
1915	562	273	37.8	27	10	1.7
1916	225	117	45.6	6	6	2.6
1917	30	19	43.0	0	0	0.0
1918	33	30	39.8	0	0	0.0
1919	41	25	34.3	0	2	4.9
1920	70	47	42.8	1	0	0.0

### RETURN CASES.

One child was admitted to hospital suffering from scarlet fever, which commenced three days after the return of his sister from the Isolation Hospital.

### DIPHTHERIA.

The number of cases of diphtheria notified during 1920 was 35, as against 51 in 1919. Five of the cases notified were subsequently found not to be suffering from diphtheria.

Twenty-seven of the cases were notified during the first half of the year, the greatest number, namely 7, occurring during the month of June. Ten of the cases occurred in St. Nicholas Ward, but no common source of infection in these cases could be traced.

During the year 2 deaths of residents were registered as being due to diphtheria, the death-rate being .03 per 1,000 of the estimated population. The case mortality was 5.7 per cent.

Twenty, or .57 per cent. of the cases notified, were removed to the Isolation Hospital.

No return case occurred during the year.

### ANTI-DIPHTHERIA SERUM.

Four applications were made by medical practitioners for the free supply of anti-diphtheria serum, 18,000 units being supplied.

Table showing number of notifications, number of cases isolated, number and percentage of deaths, 1902-1920.

Year.	No. of cases notified.	No. of cases isolated in Hospital.	No. of deaths.	Deaths per 100 cases.
1902	156	81	41	26.2
1903	68	46	20	29.4
1904	39	25	14	35.8
1905	25	14	6	24.0
1906	20	8	5	25.0
1907	12	6	3	25.0
1908	31	20	4	12.7
1909	36	18	4	11.1
1910	37	27	2	5.4
1911	44	33		9.1
1912	47	33	6	12.8
1913	57	42	9	15.8
1914	52	31	3	5.8
1915	73	51	12	16.4
1916	153	118	28	18.3
1917	98	81	12	12.2
1918	62	51	6	9.6
1919	51	34	5	9.
1920	35	20	2	5.7

### SMALLPOX.

The district was free from smallpox during the year.

Eighteen notifications were received, either from the Ministry of Health or from other Local Authorities, that persons who had been in contact with smallpox were proceeding to Carlisle. All the persons referred to in these notices were visited and kept under observation.



### ENTERIC FEVER.

Two persons were notified as suffering from enteric fever.

The first patient, a man aged 53, was admitted to the Isolation Hospital, and after observation for a few days was discharged, the illness not being Enteric Fever. A Widal reaction showed no agglutination in dilutions greater than 1 in 10. The patient recovered.

The second patient became acutely ill after a meal of herring, which was said to have been cooked two days before consumption, and another person who had partaken of the fish suffered from diarrhoea and vomiting. The onset of the fatal case was very irregular, and the whole course of the illness so aberrant as to exclude the possibility of enteric fever, and to favour the suggestion that the death was most probably due to some chronic form of intestinal toxæmia.

Table showing the average number of cases notified as enteric fever for 5-year periods, 1890-1914, and for the 6 years 1915-1920.

Years.	Average for periods of 5 years.	Year.	Number of cases notified.
1890-1894	21·2	1915	2
1895-1899	18·6	1916	3
1900-1904	12·6	1917	0
1905-1909	3·2	1918	1
1910-1914	3·8	1919	1
		1920	2

No case of typhus or continued fever was notified during the year.

## MALARIA.

Thirty-one notifications relating to patients suffering from malaria were received. In all the cases the patients had recently returned to this country after being on active service in the Balkans, Egypt, or Mesopotamia, where they had been infected with the disease. No case of malaria of indigenous origin was notified, nor was it anticipated that a local spread of this disease would occur, as the particular species of mosquito responsible for the spread of malaria, so far as I am able to ascertain, does not exist in the district.

## DYSENTERY.

1 person was notified as suffering from dysentery. The patient had suffered from dysentery while on active service in the Near East, and was suffering from a relapse of the condition at the time of notification. The case was kept under observation and precautions against spread of infection were taken. No extension of the disease occurred.

## PNEUMONIA.

74 notifications of cases of pneumonia were received during the year. In 35 instances the disease was of the acute influenzal type, and in 39 instances the notification related to the acute primary type.

In the case of both types of the disease the incidence was the highest during the spring and early summer months, 22 cases of primary and 26 cases of influenzal pneumonia being notified during the months of March to June.

All the cases were visited by the Corporation Health Visitors, and advice as to the nursing and prevention of the spread of infection, &c., was given.

180 visits were made by the Health Visitors in this connection, and 9 patients who could not with safety be nursed at home, were removed to the isolation hospital.

15 of the persons notified as suffering from acute influenzal pneumonia died, 13 of these deaths occurring in May and June, while 7 of those notified as suffering from acute primary pneumonia died.

## INFLUENZA.

During May and June a small outbreak of influenza occurred, 20 deaths from this cause being registered during these months. During the same period 21 notifications relating to Acute Influenzal Pneumonia were received, 13 of these cases terminating fatally.

30 deaths were certified as due to Influenza, 2 of the deaths being persons not residents of the City. The age distribution of the deaths occurring among the 28 persons resident in the City was as follows:—

0 to 1	1 to 2	2 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and upwards	Total
1	1	2	...	3	3	3	4	6	1	2	2	28

## INFLUENZA VACCINE.

A supply of Influenza Vaccine was received from the Ministry of Health and was issued to six medical practitioners, only four of whom made use of it. No case of influenza was reported to have occurred among those who were inoculated.

## ACUTE ENCEPHALITIS.

1 child, aged 10 months, was notified as suffering from Acute Encephalitis, but the diagnosis was incorrect.

## TETANUS.

No case of tetanus was notified during the year.

A supply of antitoxin was obtained from the Ministry of Health for the use of medical practitioners in connection with the Prophylaxis and treatment of cases of Tetanus occurring in the City. 5 applications for supplies of the antitoxin were received from medical practitioners in the City, and 41 doses were issued.

No case of Cerebro-spinal Fever or Encephalitis Lethargica was notified during the year.

Puerperal Fever, Ophthalmia Neonatorum, Measles, Whooping Cough, Chicken-pox, and Mumps, see pages 80 to 86.



Table showing case mortality of Scarlet Fever and Diphtheria isolated in Hospital compared with Home Cases.

Year.	SCARLET FEVER.				DIPHTHERIA.			
	Hospital Cases.		Home Cases.		Hospital Cases.		Home Cases.	
	No. of Cases Isolated.	Death-rate per 100	No. of Cases Isolated.	Death-rate per 100	No. of Cases Isolated.	Death-rate per 100	No. of Cases Isolated.	Death-rate per 100
1911	104	0·9	35	2·8	33	3·0	11	27·2
1912	101	1·8	9	0·0	33	6·0	14	28·5
1913	131	0·0	33	0·0	42	11·9	15	26·6
1914	196	4·6	55	0·0	31	9·6	21	0·0
1915	273	2·2	297	1·3	51	15·6	22	18·1
1916	117	4·2	108	0·9	118	22·0	35	5·7
1917	19	0·0	11	0·0	81	11·1	17	17·6
1918	30	0·0	8	0·0	51	6·0	11	18·2
1919	25	8·0	16	0·0	34	11·7	17	5·9
1920	47	0·0	20	0·0	20	5·0	10	10·0

### NOTIFICATION FEES.

The total amount paid in fees for notification of all notifiable diseases during 1920 was £20 3s. 9d.

### ISOLATION HOSPITAL.

There are two hospitals for the isolation of cases of infectious disease in the City, viz.:—

Crozier Lodge, Newtown—Total available beds, 50.

Smallpox, Belle Vue—Total available beds, 12.

5 types of infectious disease can be treated concurrently.

Table showing the number of cases removed  
to the Isolation Hospital.

Disease.			No. of cases admitted	Recovered.	Died.
Scarlet Fever	...	...	47	47	...
Diphtheria	...	...	20	19	1
Pneumonia	...	...	9	8	1
Enteric Fever	...	...	1	1	...
Erysipelas	...	...	1	1	...
Totals	...	...	78	76	2

### BACTERIOLOGICAL WORK.

The examination of sputum for the presence of tubercle bacilli is carried out by Dr. Spence. During the past year 154 specimens have been examined, in 35 of which tubercle bacilli were found.

1 swab from a throat was sent by a medical practitioner to the Clinical Research Association for examination for the Kleb's Loeffler bacillus, but the organism was not found.

During the year 8 samples of milk were purchased for the purpose of bacteriological examination from carts of persons selling milk within the City, whose dairies are situated outside the City boundary. The samples were submitted to Professor Delepine at the Public Health Laboratory, who reported that tubercle bacilli were not found in the samples.

1 sample of milk from a cow found to be suffering from disease of the udder by the Veterinary Inspector was sent to the Clinical Research Association for examination, the report stating that it contained an excess of leucocytes practically amounting to pus. Tubercle bacilli were not

detected in stained preparations made from the centrifuged deposit and cream.

5 samples of the City water supply, drawn from a domestic tap, were sent to Professor Delepine for bacteriological examination. A tabulated summary of Professor Delepine's report and his observations are given on page 22.

2 cows, detained in transit through the City on account of their unfitness to travel, were removed to the Slaughterhouse and killed. Pus collected from abscesses found in the cows was submitted for examination. Microscopical examination revealed no tubercle bacilli, no fungus of actinomyces or allied organisms, and no staphylococci or streptococci, but on inoculation the pus in both instances caused tuberculosis in the guinea pigs.

A sample of Irish butter was forwarded for bacteriological examination at the request of a medical practitioner, but no organisms of the typhoid coli group were found.

## Summary of the Examinations of Specimens in connection with Venereal Diseases.

Professor H. R. DEAN.

County or Borough in which patients reside.	Treatment centre or practitioner.	Total number of Specimens.	SYPHILIS.				GONORRHOEA	
			Wassermann Reaction		Spirochaetae.		Gonococcus.	
			No.	+	No.	+	No.	+
Carlisle ...	Cumberland Infirmary	271	200	77	8	5	63	15
	Private Practitioners	14	13	6	...	...	1	...
Cumberland ...	Cumberland Infirmary	22	12	3	2	..	8	4
	Private Practitioners	4	4	...	...	...	...	...
Westmorland ...	Cumberland Infirmary	1	1	...	...	...	...	...
Dumfriesshire ..	do.	18	10	4	...	...	8	5
Kirkcudbrightshire	do.	1	1	...	...	...	...	...
Totals		331	241	90	10	5	80	24



# Annual Return from the Public Health Laboratory, Manchester, upon Bacteriological Examination made during the year, 1920.

Professor DELEPINE.

A.	MONTH.	Bovine Tuberculosis Milk.		WATER.
		Total.	+	Bacteriological.
				Total
	January ... ..	...	...	1
	February... ..	4	...	...
	March ... ..	...	...	1
	April ... ..	...	...	...
	May ... ..	...	...	...
	June ... ..	...	...	1
	July ... ..	4	...	...
	August ... ..	...	...	1
	September ... ..	...	...	...
	October ... ..	...	...	..
	November ... ..	...	...	1
	December ... ..	...	...	...
	Total ...	8	...	5

## Various Investigations.

B.	Date.	Refer. No.	Nature.	No. of Samples. **
	December, 1920 ... ..	L.B. 12764.	Pus and slides,	4
		L.B. 12984.	2 cows. Butter.	1

Total Number of Specimens in List **A.**—13.

Total Number of Specimens in List **B.**—5.

\*\*Grand Total of Specimens received—18.

## Summary of Bacteriological Examinations.

Sputum for tubercle bacillus	...	...	154
Milk for tubercle bacillus	...	...	9
Pus from abscesses in cattle	...	...	2
Swabs for Klebs Loeffler bacillus...	...	...	1
Butter for organisms of typhoid coli group			1
Water for general bacteriological examination	...	...	5
Blood for Wassermann reaction	...	...	241
Serum for spirochaetae	...	...	10
Pus for gonococci	...	...	80
Total	...	...	503

## TUBERCULOSIS.

The arrangements for the treatment and supervision of persons suffering from tuberculosis have been carried out on lines similar to those described at length in my Annual Report for the previous year.

There is one Tuberculosis Dispensary in the City, situated in Spring Gardens Lane, and Dr. Spence, the Assistant Medical Officer of Health, carries out all the work in connection with the supervision and treatment of tuberculous patients.

The Dispensary has been open on Tuesday and Friday afternoons and Wednesday evening for adults, and on Wednesday afternoon for school children, as during the previous year. In addition, on account of the expansion of the work, the Dispensary has had to be opened on alternate Tuesday mornings for the supervision and treatment of discharged soldiers, and on alternate Wednesday mornings for the treatment of school children with tuberculin.

The Corporation possess no residential institution of their own, but have 20 beds—10 male and 10 female—reserved in Blencathra Sanatorium for the treatment of early and intermediate cases of tuberculosis.

I regret to have to report that no provision has yet been made for the treatment of persons suffering from advanced tuberculosis.

During the early part of the year the Health Committee inspected various buildings and sites in the City which were likely to be suitable for use as a tuberculosis hospital, or on which a suitable hospital could be erected, and, after mature deliberation, recommended and purchased Coledale Hall for this purpose. The Hall contained large, lofty rooms, which could have been converted at a minimum of expense into suitable wards for nursing advanced cases of tuberculosis, and a large, pleasant, and secluded garden about  $1\frac{3}{4}$  acres in extent. There was, however, much hostility to the scheme, which was rejected by the Council. The Hall has since been taken over by the Education Committee, who desire to use it as an open-air school.

The principal reason given for the opposition was the proximity of Coledale Hall to the neighbouring dwelling houses, but, as I reported at the time, with the exception of two farm houses and a cottage, the distance from the Hall to the nearest inhabited houses was three times as great as from some of the wards of the Isolation Hospital to the nearest row of houses. We have yet to learn that there is danger of tuberculosis spreading from hospital, and the transmission of the disease through the air from such an institution has not been demonstrated.

The Health Committee have since considered other proposals, but so far no other suitable property for this purpose has been found in the City, and the time within which schemes for the treatment of advanced cases of tuberculosis were to be submitted to the Ministry of Health in order to qualify for a grant of £180 per bed has now passed.

I have endeavoured to obtain accommodation for some of the persons suffering from advanced tuberculosis, and living under unsatisfactory conditions, in institutions outside the City, but have been unable to do so, as all these institutions in other areas are full. In the



circumstances, for such cases there is no alternative but treatment at home, often in overcrowded houses, with the attendant risk of spreading the disease and imperiling the lives of those, particularly young children, who come into close contact with the sick person.

Cases of surgical tuberculosis are referred to the Cumberland Infirmary for operative treatment, and are afterwards sent to Blencathra Sanatorium when this additional treatment is considered necessary.

The School Clinic is closely co-ordinated with the Tuberculosis Dispensary, as the Tuberculosis Officer also assists with the school medical work. All cases of suspected tuberculosis in children are referred to the Tuberculosis Officer for diagnosis, supervision, and treatment. The Tuberculosis Nurses are also School Nurses, and the information they obtain relating to any family is available for the officers carrying out the work in connection with both services. The Tuberculosis Officer also has charge of the special open-air class for delicate children, a large number of whom are suffering from early tuberculosis. During the routine and special examination of school children, all children who have been in contact with cases of tuberculosis are specially brought to the notice of the Medical Officer, who is able to pay special attention to any signs or symptoms pointing to infection, and is able to refer any doubtful children to the Tuberculosis Dispensary for further observation.

The services of the Tuberculosis Officer are available for the assistance of medical practitioners, and a large number of patients are referred by them to the Tuberculosis Dispensary for examination and report, or for continued observation. Phials for the collection of sputum are issued to practitioners, and reports on the examination of specimens of sputum are sent to them.

At present there are no beds in connection with the Tuberculosis Dispensary for the intensive observation of doubtful cases. For some time, however, thermometers

and charts have been issued to patients under observation, who are instructed how to take and register their temperature in the intervals between their visits to the Tuberculosis Dispensary.

It has not been deemed advisable to insist upon a systematic examination of all home contacts, as it is considered that if this were done it would raise a great deal of hostility. The School Nurses, who also act as Tuberculosis Nurses, know the homes in their district from which cases of tuberculosis have been notified, and when a child coming from such a home is presented for medical examination this fact is brought to the notice of the School Medical Officer, who pays special attention during his examination to any signs or symptoms of tuberculosis. In the case of adults the Tuberculosis Nurse investigates carefully the history of all members of the family, and tactfully persuades any contacts exhibiting suspicious signs or symptoms to come up and be examined. During her subsequent visits to the home the Nurse observes the health of other members of the family, and reports any persons she may suspect to the Tuberculosis Officer.

No special reactions, such as the Von Pirquet, or other tests, are used in connection with the diagnosis of tuberculosis; the diagnosis is made entirely on the findings of careful clinical examination, and, when necessary, the examination of the sputum.

Tuberculin has been used in the treatment of a small number of carefully selected cases, mostly children who, in spite of the usual dietetic and hygienic treatment, have failed to make any improvement. Twenty-nine cases were treated with Tuberculin B.E. and P.B.E., and for one patient who came temporarily to Carlisle from another district, the treatment with Tuberculin T.R., which she had been receiving, was continued. Two cases of lupus were treated with Tuberculin B.E. and X-Rays.



In the cases in which Tuberculin B.E. and P.B.E. were used, the Tuberculosis Officer reports that the results have been encouraging, as the children in practically all instances improved in general condition and gained weight from the time the administration of the Tuberculin was commenced.

One case of lupus which has been under treatment by means of X-Rays and Tuberculin combined has made good progress; the treatment in the second case was not commenced until the end of the year, and no definite change has yet occurred.

No arrangements have been made by the Council for the provision of dental treatment in the case of tuberculous persons.

Cases of non-pulmonary tuberculosis are kept under supervision at the Tuberculosis Dispensary, and when surgical treatment is considered necessary they are referred to the Cumberland Infirmary.

No committee for the care or after-care of tuberculosis patients has been formed. The Tuberculosis Officer is in touch with voluntary associations, and has been able to assist in this way persons whose conditions are not satisfactory, and has also been able to assist many patients in finding suitable employment.

No shelters have been provided by the Council for the use of patients at home, as only occasionally does one find sufficient or satisfactory accommodation for the erection of a temporary shelter.

The number of notifications of tuberculosis received during the year was 148, of which 13 were duplicates. Of the 135 primary notifications 99 were by medical practitioners and the Tuberculosis Officer and 36 by the School Medical Officers. 111 notifications related to pulmonary tuberculosis and 24 to other forms of the disease.

The ratio of primary notifications of tuberculosis to deaths was 265 notifications per 100 deaths.



# Summary of Notifications of Tuberculosis from 27th December, 1919, to 1st January, 1921 (53 weeks).

NOTIFICATIONS ON FORM A.

		Ages.	Number of Primary Notifications.												Total Prim-ary Noti-fications.	Total Noti-fications on Form A.
			0-1	1-5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65 & up-wards.			
Pulmonary	Males	...	1	1	..	2	2	7	12	9	7	1	1	41	47	
	Females	...	1	2	2	4	9	10	10	10	4	1	1	44	47	
Non-pulmonary	Males	...	1	...	...	..	1	1	2	2	...	...	...	6	7	
	Females	...	2	2	2	...	..	..	1	1	...	...	...	8	10	
Totals		...	5	5	4	6	17	25	22	11	2	2	99	111		

NOTIFICATIONS ON FORM B.

		Number of Primary Notifications.						Total Noti-fications on Form B.
Ages.		0-5	5-10	10-15	Total.			
Pulmonary	Males	...	12	3	15	...	16	
	Females	...	7	4	11	...	11	
Non-pulmonary	Males	...	3	2	5	...	5	
	Females	...	3	2	5	...	5	
	Totals	...	25	11	36	...	37	

NOTIFICATIONS ON FORM C.

		Sanatoria.	Poor Law Institutions.
Pulmonary	Males	26	...
	Females	23	...
Non-pulmonary	Males	...	...
	Females	...	1
	Totals	49	1

### Distribution of the Notifications of Tuberculosis in the various Wards of the City, 1920.

	Stanwix	Rickergate	Aglionby	Greystone	St. Nicholas	Currock	Denton Holme	St. Cuthbert's	Caldewgate	Newtown & Belle Vue	Carlisle
Pulmonary ...	3	10	10	16	8	13	17	12	11	11	111
Non-Pulmonary ...	...	1	2	5	3	2	7	...	3	1	24
Total	3	11	12	21	11	15	24	12	14	12	135

The total number of deaths of residents registered from all forms of tuberculosis was 51, equal to a death-rate of 0.89 per 1,000 of the estimated population. Of this number, 36 (70.6 per cent.) were due to pulmonary tuberculosis, equal to a rate of 0.63 per 1,000 of the estimated population at all ages.

### Distribution of the Deaths from Tuberculosis in the various Wards of the City, 1920.

	Stanwix	Rickergate	Aglionby	Greystone	St. Nicholas	Currock	Denton Holme	St. Cuthbert's	Caldewgate	Newtown & Belle Vue	Carlisle
Pulmonary ...	1	1	3	6	2	4	5	5	7	2	36
Non-Pulmonary ...	1	1	2	3	2	1	3	...	...	2	15
Total	2	2	5	9	4	5	8	5	7	4	51

### Age and Sex distribution of Deaths from Tuberculosis, 1920.

Ages.	0-1	1-5	5-10	10-15	15-20	20-25	25-35	35-45	45-55	55-65	65 and over.	Totals.
Pulmonary—												
Male ...	...	1	...	1	...	1	5	1	3	1	2	15
Female ...	...	...	...	1	3	4	4	6	...	2	1	21
Non-Pulmonary—												
Male ...	1	2	1	..	...	...	1	1	...	...	1	7
Female ..	1	1	1	3	1	..	...	1	...	..	...	8
Totals ...	2	4	2	5	4	5	10	9	3	3	4	51

The following table shows the period persons dying in 1920 survived after notification:—

	Not Notified	Died before Notification	Died within 7 days	Survived more than									
				1 week	1 month	3 months	6 months	9 months	1 year	1½ years	2 years	3 years	4 years
Pulmonary ...	7	2	2	25	21	18	15	12	9	5	4	2	2
Non-Pulmonary	8	1	3	3	2	2	2	1	1	1	...	..	...

### Deaths from Tuberculosis, Influenza, and other Respiratory Diseases, 1908—1920.

Year.	Pulmonary Tuberculosis.	Non-Pulmonary Tuberculosis.	Tuberculosis, all forms.	Influenza.	Other Respiratory diseases.
1908	56	34	90	10	125
1909	64	28	92	7	108
1910	52	30	82	6	91
1911	75	19	94	6	101
1912	65	11	76	8	125
1913	71	25	96	15	97
1914	70	32	102	9	97
1915	80	26	106	27	157
1916	66	29	95	26	96
1917	72	24	96	22	96
1918	48	19	67	107	133
1919	46	16	62	38	103
1920	36	15	51	28	119

During the year 182 new patients attended the Tuberculosis Dispensary, of whom 46 were insured persons, 37 discharged soldiers, and 67 children of school age. In addition, 33 patients who were too ill to attend were examined at their own homes. Of these 182 persons, 110 were suffering from tuberculosis and 72 from other conditions.



Ninety-six of the new patients were suffering from pulmonary tuberculosis, 4 from tubercular glands, 4 from abdominal tuberculosis, 3 from lupus, 2 from tuberculosis of the bones, and 1 from tuberculosis of the larynx.

The 96 persons suffering from pulmonary tuberculosis were classified as follows:—

	Insured Persons.		Discharged Soldiers.		School Children.		Other.		Total.
Stage I	8	...	6	...	28	...	3	...	45
Stage II	9	...	11	...	1	...	3	...	24
Stage III	15	...	3	...	1	...	8	...	27

Of the 72 persons not diagnosed as suffering from tuberculosis who were under supervision at the Dispensary, 33 were found to be suffering from other conditions of the chest, and in the case of the remaining 39 there was either no disease of the chest or no definite diagnosis had been made, the patients still remaining under supervision.

Twenty-four persons who had been in contact with cases of tuberculosis were referred to the Dispensary by the Tuberculosis Officer for further observation, 13 of whom were ultimately notified as suffering from tuberculosis, and 56 persons were referred to the Tuberculosis Officer by the School Medical Officer, the Ministry of Pensions, and Medical Practitioners for diagnosis, 15 of whom were found to be suffering from tuberculosis.

235 old patients remained under supervision, making a total of 417 patients who attended the Dispensary during the year.

1,539 visits were made by patients to the Dispensary for examination and supervision, and 88 visits were made by the Tuberculosis Officer to the homes of persons unable to attend at the Dispensary. 1,644 visits have been made to the homes by the Nurses for the purpose of advising upon and supervising the home life of the patients. Forty-two thermometers, 7 sputum cups and pocket flasks were given to patients, and in 5 instances cod liver oil and malt extract was provided free of charge.

Tuberculin was administered in carefully selected cases, principally children suffering from the disease in its early stages, who, in spite of open-air regime and

liberal diet, had failed to make much progress. Twenty-nine patients were treated with Tuberculin B.E. and 1 patient with Tuberculin T.R. A total of 180 injections of Tuberculin were administered during the year, and the patients without exception improved while under treatment.

The sputum of 154 patients was examined, in 35 of which tubercle bacilli were found.

Ten patients were receiving treatment in the Sanatorium on the 1st January, and 46 were admitted, making a total of 56 who received sanatorium treatment during the year. This number includes 1 patient who was admitted a second time, and also 1 patient re-admitted on three occasions, the nett number of persons receiving treatment being 52. Thirty-seven patients were discharged from the Sanatorium, 19 remaining under treatment on 31st December.

The total number of patient days in the Sanatorium was 4,591, the average duration of residence of the patients being 124.1. Five patients left the Sanatorium before their treatment was completed, the average duration of residence of the remainder being 139.3 days. Less trouble was experienced during the past year in persuading patients to remain at the Sanatorium for a sufficiently long period to obtain material benefit, but many patients still think that three months is a sufficiently long period of residence to effect a cure, and in many cases it is only with difficulty that they are persuaded to remain after the expiration of this period, while a proportion anxiously count the days that must elapse before the expiration of three months, and then leave, in spite of all advice to the contrary, on the termination of the thirteenth week.

The condition of the patients on discharge from the Sanatorium was as follows:—

Disease much improved	...	...	...	23
„ improved	...	...	...	8
„ unchanged	...	...	...	4
„ worse	...	...	...	2
				—
				37
				—



## Treatment of Tuberculous Discharged Sailors and Soldiers.

The Tuberculosis Officer has acted as medical referee to the City of Carlisle War Pensions Committee and the Ministry of Pensions Medical Board, has examined and reported upon pensioners referred to him, and has treated and supervised all pensioners suffering from tuberculosis.

During the year 69 discharged soldiers and sailors have attended the Tuberculosis Dispensary, 37 of whom were new cases and 32 were old cases. Of the new cases 30 were referred by the Pensions Committee and the Medical Board, 16 of whom were suffering from tuberculosis, and 14 who were referred for diagnosis were found to be suffering from other conditions than tuberculosis. Seven were notified by medical practitioners as suffering from tuberculosis, 5 of whom, on the recommendation of the Tuberculosis Officer, were accepted by the Ministry of Pensions to be suffering from tuberculosis attributable to or aggravated by their service in the Army.

Of the 23 new cases suffering from tuberculosis, 20 were suffering from the pulmonary form of the disease, 1 from glandular tuberculosis, 1 from abdominal tuberculosis, and 1 from tuberculosis of the larynx. Of the 14 patients suffering from other conditions, 9 were found to be suffering from other disease of the chest, in 3 cases the result of gunshot or shrapnel wounds of the chest.

The homes of tuberculous pensioners have been systematically visited, in most cases once a month, and the men kept under supervision by the Tuberculosis Nurses, who have paid 19 primary and 448 subsequent visits to their homes.

Three tuberculous pensioners were receiving treatment in the Sanatorium on 1st January, and 14 were admitted during the year. Thirteen were discharged during the year, and 4 were still under treatment on 31st December. One pensioner was re-admitted to the Sanatorium, and after 14 days' residence was allowed to leave, as work as a gardener under very favourable conditions was found for him, but after a short interval he had a severe hæmoptysis, and was re-admitted for further treatment.



The total number of patient days in the Sanatorium was 1,684, the average duration of residence for each patient being 130 days, compared with 73 days during the previous year. Less trouble was experienced in persuading the patients to remain in the Sanatorium for an adequate period than in the previous year. Only one pensioner refused to remain under treatment and left on the 16th day, while another left after 51 days' residence on account of domestic trouble.

### **PUBLIC HEALTH (VENEREAL DISEASES) REGULATIONS, 1916.**

The scheme of the Council for the diagnosis and treatment of Venereal Diseases, which has been further extended during the past year, consists of the following provisions:—

1. The free supply of outfits and full facilities to medical practitioners for the collecting of and obtaining pathological reports on blood and morbid products from infected patients or those suspected of infection.

2. The free provision of salvarsan substitutes to such medical practitioners as have satisfied the Medical Officer of Health that they are qualified to receive them under paragraph (2) of the circular of the Local Government Board of 29th August, 1916.

3. Conjointly with the County Council of Cumberland, the establishment of a Clinic for the diagnosis and treatment of Venereal Diseases at the Cumberland Infirmary, Carlisle (including the appointment of a Specialist Medical Officer).

4. Propaganda.

The development of the work during the year 1920 is therefore conveniently considered under these four headings:—

#### **(1) PATHOLOGICAL EXAMINATIONS.**

Under the agreement concluded in 1918 with Professor H. R. Dean, Department of Pathology, University of Manchester, the following pathological examinations were made during the year. The figures for 1919 are also appended.



## (2) PROVISION OF SALVARSAN-SUBSTITUTES.

The number of medical practitioners entitled to receive free supplies of salvarsan substitutes during the year was 6.

The amounts of salvarsan-substitutes supplied to general practitioners were as follows:—

Nature of Substitute.	Quantity.	Number of Doses Supplied.
Galyl, Intravenous ...	·35 gr.	1
Do.	·40 gr.	10
Galyl, Intramuscular ...	·35 gr.	3
Do.	·40 gr.	3

## (3) ESTABLISHMENT OF TREATMENT CENTRE.

During the year an agreement was entered into between the Corporation, the Cumberland County Council, and the Committee of the Cumberland Infirmary, and has been approved by the Ministry of Health. This agreement provides for the conversion of certain existing rooms in the main block of the Infirmary, and their equipment for use as In-patients' and Out-patients' Departments for persons suffering from venereal diseases in the earlier and communicable stages. At the request of the Infirmary Committee the execution of the agreement has been postponed, and the Infirmary Committee have submitted alternative proposals, providing for the alteration of the present Out-patient Department and its equipment for use as a Venereal Diseases Department. This alternative proposal has been approved by the Joint Committee of the City and County on the understanding that the necessary works of alteration will be completed at the earliest possible date. The Infirmary Committee, in the meantime, will endeavour to receive as In-patients cases of venereal disease in urgent need of hospital treatment. One necessitous female patient was sent to the Hope Hospital Leeds, on 12th November, 1920, and is still under treatment there.



Return relating to all persons resident in the City of Carlisle who were treated at the Treatment Centre at the Cumberland Infirmary during the year ended the 31st December, 1920.

	Syphilis.		Soft Chancre.		Gonorrhœa.		Conditions other than Venereal.		Total.	
	M	F	M	F	M	F	M	F	M	F
1. Number of persons who, on the 1st Jan., 1920, were under treatment or observation for	15	10	...	...	9	3	1	...	25	13
2. Number of persons dealt with during the year at or in connection with the Out-patients' Clinic for the first time and found to be suffering from	41	29	3	1	44	8	12	16	100	54
Total-Items 1 and 2	56	39	3	1	53	11	13	16	125	67
3. Number of persons who ceased to attend the Out-patient Clinic										
(a) before completing a course of treatment for	9	10	...	...	8	3	...	...	17	13
(b) after completion of a course of treatment, but before final tests as to cure of	5	5	...	...	8	1	...	..	13	6
4. Number of persons transferred to other Treatment Centres after treatment for	1	...	...	...	5	...	...	...	6	...
5. Number of persons discharged from the Out-patient Clinic after completion of treatment and observation for	4	...	3	1	8	1	...	...	15	2
6. Number of persons who, on the 1st Jan., 1921, were under treatment or observation for	37	24	...	...	24	6	...	..	61	30
Total-Items 3, 4, 5 & 6	56	39	3	1	53	11	...	...	112	51

7. Total attendances of all persons at the Out-patient Clinic :—3544.

8. Number of doses of Salvarsan-substitute administered in Out-patient Clinic :—439.

The work has been carried out throughout the past year in the temporary accommodation provided at the Infirmary. At present there are no facilities in the intervals between Clinics for the treatment of gonorrhœa in women, and the Infirmary Committee have been asked to agree to provide such treatment.

The Sister-in-charge of the V.D. Clinic, who has largely contributed to the success of the treatment by her tact and enthusiasm, has been trained by Dr. Quine in the technique of the routine treatment of gonorrhœa in women.

Dr. Quine left the service of the two Authorities by reason of his appointment at the end of the year on the staff of the Ministry of Health, and I would like to record here his loyalty and his enthusiasm for the work which he has so ably organised and carried out.

His successor is Dr. A. C. B. McMurtrie, who was on the staff of the County Medical Officer of Health, and has had experience of the work he will be called upon to carry out.

#### (4) PROPAGANDA.

The following is a summary of the propaganda work carried out in Carlisle under the direction and activities of Mr. Ernest Aronson of the National Council for Combating Venereal Diseases:—

Address to—

Men at Messrs. Pratchitt, for this and adjoining factories.

Men at Messrs. Carr's Works.

Men at Gas Works.

Men at London and North Western Railway Co. Works.

Men at Glasgow and South Western Railway Co. Works.

Men at Police Station.

Boys at Messrs. Carr's Works.

Members of the National Union of Railwaymen.

Lantern Lecture—

To meeting arranged by National Union of Railwaymen.

At Y.M.C.A., Fisher Street.

At Co-operative Hall, Botchergate.



Free literature was distributed at all the above, and also at several smaller factories.

Exhibition of the film "The End of the Road" and distribution and sale of literature at the Palace Theatre of Varieties, Botchergate.

Interviews with local employers, trade union officials, clergy and ministers, members of local organisations, such as Boy Scouts, Boys' Brigades, Y.M.C.A., Labour Party, Police, Amusement Hall Managements, Co-operative Society, the Council of Social Service, Citizens' League, the editors of local papers, and with prominent citizens.

"Dr. Beard and his staff, together with the help of the Council of Social Service, have given the organiser every assistance asked for, and have made suggestions which have been carried out, and have been extremely kind to me personally.

"The Police have helped me in various ways, particularly during the exhibition of the film.

"Miss Shawyer, of the National Council of Women, and Miss Henderson, of the Council of Social Service, have helped me to a successful campaign ending.

"Dr. Quine kindly promised to act as Honorary Secretary of the Carlisle Branch of the National Council, and the educational work promises to be most fruitful.

"The Mayor, several members of the Corporation, and other ladies and gentlemen, have helped to make my visit here happy and successful."

The provision made by the Corporation for the diagnosis and treatment of venereal diseases will be complete when the accommodation for treatment at the Infirmary becomes operative. Daily intermediate treatment of women suffering from Gonorrhœa should however be provided at an early date. Facilities for irrigation in the case of male patients suffering from Gonorrhœa have been available since 1st January, 1920; such patients have shown themselves willing to avail themselves of this provision, and a large proportion of the patients in which daily irrigation was advised have attended with regularity, the number of irrigations actually carried out being 1,962.

I hope that in the near future it may be possible to arrange that mothers and infants attending the Pre-maternity and Infant Clinics suspected by the Medical Officer for Maternity and Child Welfare may have the benefit of



advice and treatment if necessary, by the A.M.O.H. (Venereal Diseases) at the Maternity Clinic, rather than at the Cumberland Infirmary.

Facilities for disinfection (Prophylaxis) by persons who have been exposed to the risk of infection have so far not been provided, but such provision should be brought within the power of the Council's scheme.

The Ministry of Health, by the Venereal Diseases (Cumberland, &c.) Order, 1920, dated the 15th October, 1920, brought into operation in the City the Venereal Disease Act, 1917.

## MATERNITY AND CHILD WELFARE.

### INSPECTION OF MIDWIVES.

In accordance with the Midwives Act I received notice of intention to practice midwifery from 8 midwives in January, 1920, while 14 others notified their intention to practice during the course of the year, making a total of 22. During the year 10 midwives left the district, and the certificate of one midwife was cancelled by the Central Midwives' Board and her name removed from the Midwives' Roll, leaving 11 registered midwives actively engaged in the practice of their profession at the end of the year.

Midwives have been visited regularly at their homes, and some have also been interviewed at the office of the Medical Officer of Health, their bags, appliances, clothing, and other matters have been kept under supervision, and their registers carefully examined, 29 routine and 17 special visits being paid for these purposes.

821 cases of confinement were attended by midwives during the year.

Notices were received from midwives for the following conditions:—

Cases in which the midwife advised the sending for	
medical help           ...       ...       ...       ...	92
Notification of the intention to substitute artificial	
for breast feeding       ...       ...       ...       ...	65
Notification of still-births   ...       ...       ...       ...	15

The following conditions were stated by midwives as the reason for artificial feeding:—

Inability to breast feed       ...       ...       ...       ...	14
Necessity for mother to return to work   ...       ...	12

65

labour.

## HEALTH VISITORS.

The duties of the Corporation Health Visitors were outlined in the report for the year 1919. The establishment of Ante-natal and Infant Consultation Clinics at the City of Carlisle Maternity Hospital, at which the Health Visitors attend and assist in rotation, has increased their duties. Attendance at these clinics has the advantage of keeping the Health Visitors more closely in touch with the welfare of the young children and expectant mothers in their districts, and of quickening their interest by

informing them at first hand of the doctor's opinion and the treatment advised in the case of ailing children or expectant mothers.

The provision of milk in necessitous cases for expectant mothers has also added to the work of the Health Visitors, as two visits each month have been paid by them to each family in receipt of milk. While this work increases the duties of the Health Visitors it ensures more frequent visits to the poorer families who most require the help and advice the Health Visitors are able to give, and when other help is needed they are referred by them to the clinics for medical advice.

**Table showing the number of visits paid by the Health Visitors for various purposes.**

Total number of visits to homes	...	...	...	11,266
<hr/>				
Primary visits under the Notification of				
Births Acts	...	...	...	1,450
Re-visits to children, 0—1	...	...	...	3,682
1—2	...	...	...	1,808
2—3	...	...	...	1,740
3—4	...	...	...	1,249
4—5	...	...	...	915
Total number of routine visits to				
children			—	10,844
Visits to expectant mothers, Primary	...	...	...	97
Re-visits	...	...	...	169
Visits to boarded-out children	...	...	...	79
Visits <i>re</i> deaths	...	...	...	126
Visits <i>re</i> infectious diseases—				
Acute Primary and Influenzal Pneumonia	...	...	...	180
Measles	...	...	...	80
Whooping Cough	...	...	...	241
Ophthalmia Neonatorum	...	...	...	295
Chickenpox	...	...	...	17
Mumps	...	...	...	6
Anterior Poliomyelitis	...	...	...	11
Puerperal Septicæmia	...	...	...	7
Bronchitis	...	...	...	71
Broncho-Pneumonia	...	...	...	9
Impetigo	...	...	...	3
Visits to Baby Welcomes	...	...	...	60
Visits to Day Nursery	...	...	...	6
Visits to Infant Consultation Clinics	...	...	...	27
Visits to Ante-natal Clinics	...	...	...	19



## HOME NURSING.

Early in the year the Health Committee made arrangements with the Carlisle District Nursing Association for the assistance of the Association Nurses in respect of home nursing in suitable cases of Puerperal Fever, Measles, Whooping Cough, Epidemic Diarrhœa, Ophthalmia Neonatorum, the following arrangements being approved by the Council, viz.:—

That a retaining fee of £20 be paid to the Association with the further fee of 1s. per visit in respect of services rendered by the Association's Nurses, as may be required by the Medical Officer of Health, the Association to supply such records and other information as the Medical Officer may from time to time require, the arrangement to remain in operation for a period of twelve months.

Under these arrangements in 17 cases nursing assistance was requisitioned as follows:—

	No. of Cases.	No. of Visits.
Ophthalmia Neonatorum ... ..	9	550
Pneumonia and Measles ... ..	3	35
Whooping Cough and Pneumonia ... ..	2	32
Puerperal Septicæmia ... ..	3	37
	<hr/> 17	<hr/> 654

The cost of the scheme for the year was £52 14s. 0d.

## THE MATERNITY HOSPITAL.

The Corporation Maternity Hospital at No. 3, George Street, Carlisle, was opened to receive patients on 23rd May, 1920.

The number of cases admitted, with the results of treatment to both mother and child, is shown in the following table.

The majority of patients applied for admission on their own initiative, the reason being either over-crowding of the home, or that the patient being a lodger the landlady desired that the confinement should not take place at her house.

Several cases were sent to hospital by medical practitioners on account of abnormal conditions. Two cases were also referred to hospital by medical practitioners

on account of dangerous conditions occurring during pregnancy. Cases have also been referred to the hospital for confinement by the midwives of the Carlisle District Nursing Association.

(1) Total number of cases admitted	...	...	36
(a) Discharged	...	...	35
(b) In hospital on December 31st awaiting confinement	...	...	1
			<hr/> 36
(2) Average duration of stay in hospital	...	Days,	18
(3) Number of cases delivered by midwives			14
(4) Number of cases delivered by doctors	...		15
Number admitted for ante-natal treatment only	...		5
Delivered outside hospital and admitted for post-natal treatment	...		1
			<hr/> 35
(5) Number of cases in which medical assistance was sought by the midwife, with reasons for requiring assistance:—			
(a) Ante-Natal	...	...	9
i Albuminuria, with general Anasarca	...	...	2
ii Œdema of Vulva	...	...	1
iii Hyperemesis Gravidarum	...	...	2
iv Anæmia	...	...	1
v Debility	...	...	2
vi Pelvic Contraction requiring Induction	...	...	1
			<hr/> 9
(b) During Labour	...	...	14
i Pelvic Contraction requiring Forceps			1
ii Delayed 2nd Stage (9)			
Requiring Forceps	...	...	7
Requiring Rupture of Membranes			1
Requiring Episiotomy	...	...	1
iii Œdema of Vulva requiring Forceps			1
iv Retention of Membranes	...		1
v Accidental Hæmorrhage	...		2
			<hr/> 14

(c) After Labour	...	...	...	13
i For Suture of Perineum	...	...	9	
ii For Eclampsia	...	...	1	
iii For Rise of Temperature	...	...	3	
			—	
			13	
(d) For Infant	...	...	...	9
i For Artificial Feeding	...	...	3	
ii For Resuscitation	...	...	2	
iii For slight Inflammation of Eyes	...	...	2	
iv For Injury to Scalp	...	...	1	
v For division of Frænum Linguae and Dilatation of Prepuce	...	...	1	
			—	
			9	
			—	
(6) Number of cases notified as Puerperal Sepsis, with result of treatment in each case	...	...	...	0
(7) Number of cases in which temperature rose above 100·4° F. for 24 hours, with rise of pulse rate	...	...	...	3
(8) Number of cases notified as Ophthalmia Neonatorum, with result of treatment in each case	...	...	...	0
(9) Number of cases of "Inflammation of the Eyes, however slight"	...	...	...	2
(10) Number of infants not entirely breast-fed while in the Institution, with the reasons why they were not breast-fed	...	...	...	3
(a) Albuminuria with general Anasarca in mother	...	...	1	
(b) Cardiac disease in mother	...	...	1	
(c) Anæmia (profound) in mother	...	...	1	
			—	
			3	
			—	
(11) Number of maternal deaths, with causes	...	...	...	0
(12) Number of foetal deaths (stillborn or within days of birth) and their causes	...	...	...	4
(a) Prematurity	...	...	1	
(b) Accidental Hæmorrhage	...	...	2	
(c) Contracted Pelvis...	...	...	1	
			—	
			4	
			—	



Post-mortem examination was considered unnecessary in each instance.

Obstetric operations performed—

(a) Forceps delivery ... ..	9
(b) Induction of labour by Bougies ...	1
(c) Hydrostatic dilatation of Cervix...	1
(d) Episiotomy ... ..	1
	<hr/>
	12
	<hr/>

### THE ANTE-NATAL CLINICS.

Since the opening of the Ante-natal Clinics there have been 93 attendances of 46 individual patients.

It is hoped that in future more advantage will be taken of these clinics by expectant mothers, even though they do not desire to come into hospital for their confinement. Any expectant mother who desires to attend is welcomed.

Many stillbirths and much difficulty at confinement will be prevented by recourse to medical observation and treatment of abnormal conditions of this kind arising in respect of pregnancy. Among such conditions may be specially mentioned the presence of albuminuria (with its dangers), the presence of contraction of pelvis, heart disease, and many other abnormal conditions which medical examination would reveal, and which could be rectified or ameliorated by rest and appropriate treatment in hospital for some time before labour.

No charge is made to patients who attend the Ante-natal Clinic, and the advantages to be derived are obvious. All maternity cases should be under frequent ante-natal supervision, and it is hoped doctors, midwives, and other citizens of the City will take advantage of the facilities provided.

In addition to the ante-natal work carried out at the Maternity Hospital Clinics, 270 visits were paid by the Health Visitors to expectant mothers.

## INFANT CONSULTATIONS.

An Infant Consultation Clinic is held at the Maternity Hospital on Tuesday afternoons from 2 p.m. to 4-30 p.m. for children up to the age of 5 years. The weighing of infants takes place in a small well-heated room, after which they are seen by the doctor, who advises the mother upon important matters of the child's health and management, and, if necessary, simple remedies are provided for the child, but it is more desirable that these clinics should be regarded as preventive and educational rather than remedial in their aims. Virol is supplied at cost price where the circumstances of the parents are such that they are unable to afford to buy this preparation through the usual channels.

Cases are referred to this Clinic from the several Welfare Centres, and also by the Health Visitors, who discover suitable cases during routine visits. A special effort is made to obtain the attendance of infants for whom a supply of free milk is provided, partly because they are considered to be the children who most need attention, and also in order that the Medical Officer may observe what beneficial effect the milk provided has upon the child. The table which sets out the reasons for attendance of children at the Infant Consultation Clinic shows that a large proportion—more than one quarter—are healthy children. The practice of bringing apparently healthy children occasionally to see the doctor has everything to recommend it, as it is by this means that early signs of disease can be detected and treated. Again, the consultations offer facilities to the mother who is considering the question of weaning her child to obtain advice and perhaps avoid the necessity of depriving the baby of breast milk; it is therefore desirable that mothers should avail themselves freely of these facilities.

96 children attended this Clinic, the total number of attendances during the seven months ending 31st December being 148, an average of 6 per session. This number was increasing at the end of the year.

Table showing the conditions and number of attendances at the Infant Consultation Clinic, Maternity Hospital, George Street:—

Normal Cases (for observations)	...	...	48
Errors in Diet—			
Overfeeding	...	...	1
Malnutrition	...	...	9
Derangements of the Alimentary System—			
Constipation	...	...	2
Gastritis	...	...	8
Diarrhœa	...	...	8
Enteritis	...	...	2
Gastro-enteritis	...	...	8
Jaundice	...	...	2
Worms	...	...	3
Enlarged tonsils	...	...	2
Hernia	...	...	2
Derangements of Respiratory and Circulatory System—			
Bronchitis	...	...	9
Anæmia	...	...	1
Congenital heart disease	...	...	4
Derangements of the Skin and Genito-urinary System—			
Phimosis	...	...	4
Impetigo	...	...	9
Scabies	...	...	2
Eczema	...	...	2
Granulation of umbilicus	...	...	3
Affections of the Eyes—			
Ophthalmia	...	...	2
Conjunctivitis	...	...	3
Keratitis	...	...	2
Constitutional Diseases—			
Rickets	...	...	1
Epilepsy	...	...	1
Congenital Syphilis	...	...	10



## VOLUNTARY SOCIETIES.

### (1)—BABIES' WELCOMES AND SCHOOLS FOR MOTHERS.

There are four voluntary centres, viz., at West Walls, Caldewgate, Botchergate, and Stanwix, which are provided by the Carlisle Mothers' and Babies' Welcomes Association, each of which is visited by the Corporation Maternity and Child Welfare Medical Officer once a fortnight. Two centres are open on Monday afternoon and two on Wednesday afternoon. A Corporation Health Visitor attends at each consultation, who supervises the undressing and weighing of the children. New babies are examined by the doctor at their first visit and subsequently as often as may be considered necessary. A short address is generally given by the doctor on some matters connected with health. Continuous medical records of the children are kept on cards, provided by the Corporation, such as are in use at the Maternity Hospital Clinic. The cards will be available for the information of the School Medical Officer when the children are admitted to the public elementary schools, if required. Co-ordination between the Council's scheme for Maternity and Child Welfare and the Babies' Welcomes and Schools for Mothers may therefore be considered satisfactory.

The Annual Report of the Association shows that 1,602 children attended the Welcomes, making in all 2,288 attendances, an increase of 403 over the attendances for the previous year. The average attendance at each centre is about 20, or 80 per week, an average of 5 per week being new cases. These figures, however, show that less than one-fifth of the total number of babies born in Carlisle attend the centres. Still, the fact that the attendances are increasing may be taken as a hopeful sign. 64 health talks and 7 cooking lessons were given to mothers attending the Welcomes during the year.

It is regretted that the premises in which the Welcomes are held permit of little being done in the way of teaching domestic science. One gas ring in a dark corner does not allow a very clear demonstration on cookery to be given to 30 or 40 mothers. Efforts are being made to find more suitable accommodation, but owing to the shortage of the type of building necessary for these meetings this has so far been found impossible.

## (2) DAY NURSERY.

The Day Nursery is unfortunately still being carried on in unsuitable premises in Abbey Street, but considering the existing defects of the premises the work of the Nursery shows a satisfactory standard and the health of the children is good. The occurrence of minor ailments from time to time cannot be avoided; these are attended to by the Corporation Medical Officer for Maternity and Child Welfare, who acts as Medical Officer of the Day Nursery, and visits regularly once a week and such other times as required. As these ailments are likely to be cured more quickly at the Day Nursery than at home, the ailing children should not be excluded if this can possibly be avoided unless the condition is contagious.

No outbreak of any epidemic disease was experienced at this Institution during the year.

The average number of children attending for whole days is 11.6, the attendance for the Saturday (half day) is very variable. Since the recent occurrence of unemployment certain children, as one would expect, have been kept away for days at a time. The fee charged does not cover the cost of the child's food while in the Day Nursery.

## FREE PROVISION OF MILK.

The Corporation has now the power to supply milk, either free or at less than cost price, in necessitous cases. Instead, however, of supplying the full amount of milk required at a reduced price a varying proportion of the total requirements of families has been given free, in the expectation that the remainder would be bought by the family. This plan has been found to work satisfactorily.

From 14th March to 31st December, 1,849 gallons of milk were distributed free, the cost amounting to approximately £280.

During this period 131 cases were investigated and a record of the conditions found in each case made. In 22 instances it was considered that the circumstances of the family were not sufficiently necessitous to justify a free supply of milk.



## STILL-BIRTHS.

The still-births notified during the year numbered 57; the number of cases legally notifiable was 55, particulars of which appear in the following table.

The number of still-births notified by midwives was 15.

Table showing causes, sex, legitimacy, and period of gestation of 55 still-births:—

		Legitimate.	Illegitimate.	Male.	Female.	Full Term.	8 Months.	7 Months.
	Total.	48	7	27	28	37	5	13
Malpresentation & Malpositions (4 Transverse, 2 Breech, 1 Cord, 1 Occipito-posterior)	8	8	0	4	4	7	0	1
Instrumental Delivery ...	13	12	1	7	6	11	2	0
Contracted Pelvis ...	1	1	0	1	0	1	0	0
Large Child ...	1	1	0	0	1	1	0	0
Cord Round Child's Neck ...	2	2	0	1	1	2	0	0
Anti-partum Hæmorrhage ...	3	2	1	2	1	0	0	3
Maternal Conditions—								
Fits ...	2	2	0	0	2	0	1	1
Albuminuria ...	2	2	0	1	1	1	1	0
Fall ..	1	1	0	0	1	0	0	1
Weight Lifting ...	2	1	1	1	1	1	0	1
Anæmia ...	1	1	0	0	1	1	0	0
Born Before Arrival ..	3	2	1	2	1	1	0	2

The number of legitimate births was 1,341, the percentage of legitimate still-births to this total being 3.6.

The number of illegitimate births was 84, the percentage of illegitimate still-births to this total being 8.3.



In 42 per cent. no definite cause of still-birth could be ascertained. In nearly one-third of these cases, more than half of whom were *primiparæ*, the child had reached full term.

There is a slight difference of four between the number shown in the returns of still-born children buried in the Carlisle Cemeteries and the number notified, but as this discrepancy is small I do not propose to comment further upon it, beyond saying that the notification of still-births under the Notification of Births Acts appears to be satisfactory.

It is, I feel sure, possible to reduce the still-births occurring in the City, but to this end it is necessary to have the sympathy and co-operation of all doctors and midwives in the efforts which are being made by the Corporation in respect of Maternity and Child Welfare.

### INFANT MORTALITY.

Nett Deaths from stated causes at various ages under one year of age.

CAUSE OF DEATH.				Under 1 Week.	1-2 Weeks.	2-3 Weeks.	3-4 Weeks.	Total under 4 Weeks.	4 Weeks & under 3 Months.	3 Months and under 6 Months.	6 Months and under 9 Months.	9 Months and under 12 Months.	Total Deaths under One Year.
All Causes.	{ Certified ...	...	...	25	6	7	6	44	23	22	15	7	111
	{ Uncertified ...	...	...	...	...	...	...	...	...	2	...	1	3
{ Measles ...	...	...	...	...	...	...	...	...	...	...	1	..	1
{ Scarlet Fever ..	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Convulsions ...	...	...	...	...	1	...	1	2	...	2	...	...	4
{ Bronchitis ..	...	...	...	...	...	...	...	...	...	1	1	3	5
{ Pneumonia (all forms) ...	...	...	...	...	...	1	...	1	4	2	6	1	14
{ Diarrhœa ...	...	...	...	...	...	...	...	...	...	...	1	1	2
{ Enteritis ...	...	...	...	...	1	...	...	1	5	4	...	...	10
{ Syphilis ...	...	...	...	...	...	...	...	...	...	...	...	...	...
{ Atelectasis ...	...	...	...	1	...	...	...	1	...	...	...	...	1
{ Congenital Malformations ...	...	...	...	3	1	1	2	7	3	2	1	...	13
{ Prematurity ..	...	...	...	16	1	3	1	21	1	1	...	...	23
{ Atrophy, Debility & Marasmus...	...	...	...	4	1	1	1	7	4	4	1	1	17
{ Other Causes ...	...	...	...	1	1	1	1	4	6	8	4	2	24
Totals ...				25	6	7	6	44	23	24	15	8	114
Nett Births in the year.				{ Legitimate, 1341		Nett Deaths in the year		{ Legitimate Infants, 105.					
				{ Illegitimate, 84				{ Illegitimate ..		9.			

The total number of deaths of infants under one year during 1920 was 122, the number of deaths of residents being 114, equivalent to a nett infant mortality rate of 80 per thousand births registered. Thus the nett infant mortality rate for Carlisle for 1920 is exactly the same as the infant mortality rate for the whole of England and Wales during the same period. As Carlisle belongs to the group of County Boroughs of the North of England, in which the average infant mortality rate is considerably higher than the infant mortality rate for the whole of England and Wales, this result may be considered to be satisfactory. Exceptional factors contributed to this result, which are unlikely to be repeated in subsequent years, so that disappointment must not be felt if the nett infant mortality rate should be higher during 1921.

One of the above-mentioned factors was the exceptionally cool and wet summer; coolness favours a low mortality from diarrhoeal diseases, the incidence of which corresponds with the ground temperature; and wetness contributes to the same result by laying the dust, which is one means by which the germs of this disease are distributed.

Another factor which reduces the nett infant mortality is the higher birth-rate for the current year, this birth-rate being the denominator on which the mortality figure is calculated. A false idea is produced, as a certain proportion of the deaths are among children born during the preceding year, which furnished a lower birth-rate. On the other hand, a certain proportion of the deaths in 1921 will be among children born in 1920, but the infant mortality rate, calculated on the birth-rate for 1921, will probably give a false impression of a rise, as the birth-rate upon which it is calculated will almost certainly be lower than the birth-rate for 1920.

The Registrar-General in his report for 1919 suggests that the nett infant mortality rate might be corrected by using as a denominator a figure made up of the sum of 70 per cent. of the births of the current year, and 30 per cent. of the births of the preceding year.

Calculated in this way, the corrected infant mortality rate works out at 86.6 per 1,000, instead of 80 per 1,000.

A reference to the table of mortality rates for various ages of infants under one year of age shows that, compared



with a ten-year average, the reduction has occurred in every age group, being least in the group of deaths occurring at three to six months, the epidemic of whooping cough having taken heavy toll of infants of this age.

**Rates of Mortality among Infants at various ages, and from the principal causes per 1,000 births.**

Year	Nett Infant Mortality Rate.	AGES.					CAUSES.					
		Under 4 Weeks	4 Weeks and under 3 Months	3 Months and under 6 Months	6 Months and under 9 Months	9 Months and under 12 Months	Not Preventible.			Preventible.		
							Premature Birth	Atrophy, Debility & Marasmus	Congenital Malformations and Atelectasis.	Diarrhoea and Enteritis	Bronchitis and Pneumonia	Whooping Cough
1909	123.6	47.9	26.1	20.9	14.8	13.9	21.7	17.4	7.0	20.9	13.1	4.4
1910	109.1	41.9	19.1	21.0	15.7	11.4	28.8	13.1	5.2	12.2	14.8	4.4
1911	145.0	45.0	27.0	27.0	25.2	20.8	18.0	12.6	4.5	37.9	26.1	9.0
1912	102.4	42.0	15.8	16.6	17.5	10.5	15.8	15.8	9.6	9.6	21.9	6.1
1913	127.1	49.8	17.2	27.5	19.0	13.7	28.4	12.9	6.0	19.0	18.0	3.4
1914	122.4	48.0	25.6	21.5	15.7	11.6	19.8	15.7	5.6	20.7	18.2	5.8
1915	144.3	51.2	30.2	26.8	14.3	21.8	30.2	12.6	5.9	15.9	20.1	10.1
1916	101.5	47.1	13.6	16.3	15.4	9.1	27.2	7.3	8.1	17.2	14.5	0.0
1917	106.5	39.4	16.1	23.3	15.2	12.7	20.6	7.2	10.8	24.2	10.7	1.8
1918	126.8	38.7	17.4	26.1	30.0	14.5	22.3	10.6	4.8	14.5	25.2	19.4
1919	107.9	45.9	17.8	18.8	13.1	12.3	19.7	22.5	9.4	13.1	20.6	0.0
1920	80.0	30.2	13.4	19.3	10.5	7.0	16.1	11.9	9.1	8.6	13.3	3.5

**Infant Mortality Rates for the various Wards, 1918-1920.**

Year	Stanwix & Etterby	Rickergate	Aglionby	Greystone	St. Nicholas	Currock	Denton Holme	St. Cuthbert's	Caldewgate	Newtown & Belle Vue	Carlisle
1918	108.7	141.2	135.4	101.7	94.9	93.8	125.0	193.3	156.2	97.2	126.8
1919	81.6	97.8	123.3	83.9	125.0	65.4	160.6	119.0	115.1	65.8	107.9
1920	46.5	77.5	54.3	100.0	68.6	57.4	81.6	113.2	87.0	78.4	80.0



# Deaths of Children under 1 year of age, classified according to Season, Age, Legitimacy, Feeding, Care of Food in the Home, and Prematurity.

Disease.	Total No. of Deaths.	Season.				Age.						Legitimacy.		Feeding.			Food Storage.		Prematurity.	
		Dec.-Feb.	Mar.-May	June-Aug.	Sept.-Nov.	1-7 days	1 week-1 month	1-3 months	3-6 months	6-9 months	9-12 months	Legitimate	Illegitimate	Breast	Artificial	Not fed	Satis- factory	Unsatis- factory	Premature	Full-time
Prematurity ...	23	4	10	4	5	20	3	2	1	1	...	23	...	4	3	16	20	3	23	...
Congenital Defects ...	13	3	2	1	7	7	2	2	1	1	...	11	...	3	5	5	11	2	2	11
Atelectasis ...	1	1	...	...	...	1	...	...	...	...	...	1	...	...	...	1	1	...	...	1
Atrophy, Marasmus	17	6	8	1	2	3	4	4	5	1	...	15	2	5	11	1	11	6	2	15
Want of Breast Milk	1	...	1	...	...	1	...	1	...	...	...	1	...	...	1	...	1	...	...	1
Injury at Birth	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	1	...	...	1
Bronchitis ...	5	1	4	...	...	...	...	...	2	1	...	3	2	1	4	...	3	2	...	5
Pneumonia ...	14	7	3	3	1	...	1	4	3	4	2	13	1	11	3	...	11	3	1	13
Pleurisy ...	1	1	...	...	...	...	...	...	...	...	1	1	...	...	1	...	1	...	...	...
Diarrhoea ...	12	2	5	...	5	...	1	4	5	1	1	12	...	5	7	...	9	1	...	12
Gastritis ...	3	...	...	1	2	...	...	1	2	...	...	3	...	1	2	...	2	...	...	3
Appendicitis	1	1	...	...	...	...	...	1	...	...	...	1	...	1	...	...	1	...	...	1
Measles ...	1	...	1	...	...	...	...	...	...	1	...	1	...	...	1	...	1	...	...	1
Whooping Cough	5	3	2	...	...	...	...	...	4	1	...	5	...	3	2	...	2	3	...	5
Influenza ...	1	1	...	...	...	...	...	1	...	...	...	1	...	1	...	...	1	...	...	1
Rickets ...	4	...	...	1	3	...	...	...	2	...	...	3	1	...	4	...	3	1	3	...
Convulsions ..	4	4	...	...	...	1	1	...	2	...	...	4	...	3	1	...	3	1	...	4
Meningitis (inc. Tubercular)	4	1	...	...	3	...	...	...	2	2	...	3	1	2	2	...	2	2	...	4
Cerebral Hæmorrhage	1	...	...	1	...	...	1	...	...	...	...	1	...	...	1	...	1	...	...	1
Pemphigus ...	1	1	...	...	...	...	1	...	...	...	...	1	...	1	...	...	1	...	...	1
Accidents ...	1	1	...	...	...	...	1	...	...	...	...	1	...	1	...	...	1	...	...	1
Total ...	114	37	36	13	28	33	15	18	28	14	6	105	9	42	48	24	81	33	32	82

Table showing the Death-rate per 1,000 infants under 1 year, classified according to the Method of Feeding, 1912—1920.

Mode of Feeding.	1912	1913	1914	1915	1916	1917	1918	1919	1920	Average 9 years.		
										No. of Children.	No. of Deaths.	Mortality Rate.
Total infant mortality rate ...	102.4	127.1	122.4	144.3	101.5	106.5	126.8	107.9	80.0	10451	1170	112.0
Mortality rate for breast-fed infants ...	46.0	45.1	58.3	74.9	44.3	25.3	49.6	44.2	35.1	8323	388	46.6
Mortality rate for infants partly fed on breast and partly on bottle ...	100.0	833.3	400.0	500.0	133.3	515.1	122.2	378.4	171.7	352	95	269.9
Mortality rate for infants fed by bottle ...	401.6	491.7	476.6	612.0	428.6	324.3	520.4	230.3	209.8	1038	406	391.0

While a certain amount of satisfaction may be felt over the reduced infant mortality rate, the question remains can more be done?

The causes of infant mortality are divisible into two groups, avoidable and unavoidable. The avoidable causes mostly affect infants over the age of one month, and the chief of these are respiratory diseases, which in 1920 carried off 20 infants, or nearly one-sixth of the total deaths; diarrhœa and gastritis, which were responsible for 19 deaths, or a further one-sixth; and infectious diseases, which, if we include tubercular meningitis, carried off 9 babies.

Can these deaths be further reduced? Reference to the accompanying tables shows that in the case of deaths from diarrhœa and gastritis nearly two-thirds were artificially fed, and that in two-thirds of the cases the mode of storing the food was unsuitable. All the deaths from diarrhœa and gastritis were legitimate, full-time children, so that the influence of illegitimacy and prematurity, two predisposing causes, must be excluded. It is therefore strongly in evidence that these deaths were closely connected with artificial feeding, and the practice of artificial feeding without strict attention to the storage and preparation of the food and utensils is almost bound to cause diarrhœa and gastritis, likely to terminate in death.

In the case of respiratory diseases, over one-third of the deaths were among children who were artificially fed.

With regard to infectious diseases, similar results were observed. Of 9 deaths, 4 (including one case of tuberculous meningitis) were artificially fed.

In the case of rickets all the deaths were those of artificially-fed children. Two-thirds of the deaths from



atrophy and marasmus occurred among artificially-fed infants.

Thus the question of preventible infant mortality is largely one of feeding. In all probability not more than 1 per cent. of all mothers are absolutely unable to feed their infants, and the tendency, which is shown by the table of notifications of artificial feeding, for a mother to wean her child for altogether inadequate reasons is strongly to be condemned.

Several deaths occurred among infants from gastro-enteritis, who had been in hospital for operation. I am strongly of opinion that in instances where this involves separating the nursing infant from its mother, such as operations for hernia and like conditions, the operation should be postponed until the baby has been weaned normally, unless the nursing mother is permitted to accompany her baby to hospital.

That the debility caused by artificial feeding continues long after infancy is proved by the fact that 50 per cent. of the children dying between the age of 1 and 5 years were artificially fed.

Among causes generally classed as unavoidable are grouped prematurity and congenital defects, to which atrophy and marasmus are generally added. In the case of congenital defects little can be done, but can the death-rate from prematurity be reduced? 37 children were born prematurely, of whom 32 died—23 from prematurity alone, 3 from rickets, 2 from marasmus, 2 from congenital defects, and 1 each from pneumonia and pleurisy. The information obtained shows that in 2 instances, viz., congenital syphilis, the premature birth might have been avoided by treatment of the mother. Similarly in 4 instances of still-birth it is reasonable to assume that a

healthy child might have been born had the mothers had advice and appropriate treatment.

Deaths from Diarrhœa and Gastritis of children under 5 years of age, arranged according to district, age, feeding, and storage of food.

<i>District.</i>				<i>Age.</i>			
Aglionby	...	...	4	1—7 days	...	...	0
Greystone	...	...	1	1 week—1 month	...	...	1
St. Nicholas	...	...	1	1 month—3 months	...	...	5
Currock	...	...	2	3—6 months	...	...	7
Denton Holme	...	...	4	6—9 months	...	...	1
St. Cuthbert's	...	...	1	9—12 months	...	...	1
Caldewgate	...	...	0	1 year—2 years	...	...	4
Rickergate	...	...	5	2—5 years	...	...	0
Newtown	...	...	1				
Stanwix	...	...	0				

<i>Feeding.</i>				<i>Food Storage.</i>			
Breast	...	...	5	Satisfactory	...	...	6
Artificial	...	...	12	Unsatisfactory	...	...	13
Ordinary Food	...	...	2				

## ILLEGITIMACY AND BOARDED-OUT CHILDREN.

The number of illegitimate births registered during 1920 was 84, the percentage of illegitimate births to the total registered births being 5.9.

The illegitimate still-births were 8.3 per cent. of the total illegitimate births, while legitimate still-births were 3.6 per cent. of the total legitimate births. It is thus shown that still-births were more than twice as frequent among the unmarried mothers.

On the other hand, none of the deaths from prematurity were among illegitimate children.

There is one home in Carlisle, under the auspices of the Diocesan Association, where unmarried mothers may await their confinement. The actual confinement has, in most cases, taken place at the Corporation Maternity Hospital since its opening.

There is no residential home for infants in Carlisle; these are either boarded out or sent to the Infants' Home at Hexham.

Boarded-out children are regularly visited by the Health Visitors, and unsuitable and irregular conditions found by them are usually verified and intimated to the Clerk to the Guardians. During the year 79 visits were paid by the Health Visitors to boarded-out children.

The fact that no deaths from diarrhœa occurred among illegitimate children is a testimony to the value of the work of the Health Visitors, who devote special attention to such children.

### PUERPERAL FEVER.

During the year 9 notifications relating to Post-partum Fever were received. In two instances the diagnosis of this condition was incorrect. In 3 instances the patient died.

In 4 instances the condition followed upon difficult labour, in which operative interference was necessary and in which a rupture of the perineum occurred. In one instance Cæsarean section had been performed after very prolonged labour due to contracted pelvis. In another instance the baby had been delivered by a pupil midwife and the placenta by the doctor who arrived after the baby was born; the remaining case occurred in the practice of a certified midwife, whose name was subsequently removed from the midwives' roll for malpraxis.



## OPHTHALMIA NEONATORUM.

56 cases of Ophthalmia Neonatorum occurred during the year, 15 being notified by medical practitioners, 34 by midwives, and 5 by both the doctor and the midwife. In two instances no notification was received, one case being observed by a Health Visitor during her primary visit on the tenth day after birth, the other being a secondary case occurring in a twin.

In 43 instances both eyes were affected; in the remaining 13 the inflammation was limited to one eye. In 2 instances there was some damage to one of the corneæ, but the sight of the eye in each instance will only be slightly impaired, and in 3 instances the child died from intercurrent disease before the eyes recovered.

35, or 63 per cent. of the cases, occurred during the first 4 months of the year, while 12 cases, or 21 per cent. of the total, occurred in Caldewgate Ward.

Each case was visited by a Health Visitor immediately on receipt of the notification, and where necessary by myself or my assistant, and was kept under close observation until recovered, 295 visits being paid by the Health Visitors to these cases.

In the case of 9 of the most severe cases a nurse of the Carlisle District Nursing Association attended at the homes of the little patients and carried out the necessary treatment of the eyes; 550 visits were paid by the nurses of the Association for this purpose.

In 4 instances the baby received treatment at the out-patient department of the Cumberland Infirmary.

# OPHTHALMIA NEONATORUM.

No.	Sex.	Age at time of Notification.	Condition of Eye.	Result.
1	F	4 days	Both conjunctivæ inflamed, purulent discharge	Cured.
2	M	10	Right conjunctiva inflamed, small muco-purulent discharge	Do.
3	M	9	Both conjunctivæ swollen and inflamed, thin purulent discharge	Do.
4	M	6	Both conjunctivæ slightly inflamed, slight discharge left eye	Do.
5	F	2	Left conjunctiva slightly inflamed and slight muco-purulent discharge	Do.
6	F	9	Both conjunctivæ swollen and inflamed, thin purulent discharge	Do.
7	M	10	Right conjunctiva swollen and inflamed, slight discharge	Do.
8	M	6	Not Ophthalmia Neonatorum—injury to eye during instrumental delivery	—
9	F	10	Left eye inflamed, thin serous discharge	Cured.
10	M	12	Right eye inflamed and swollen, no discharge	Do.
11	M	12	Both eyes inflamed, purulent discharge	Do.
12	F	2	Both eyes much inflamed and swollen, purulent discharge	Right eye clear. Left eye some opacity.
13	M	10	Both eyes inflamed, slight purulent discharge	Cured.
14	M	6	Both eyes inflamed and swollen. Left eye slight discharge	Do.
15	M	7	Both eyes inflamed and swollen, purulent discharge	Do.
16	M	6	Both conjunctivæ inflamed and swollen, slight muco-purulent discharge	Do.
17	F	13	Both conjunctivæ inflamed, slight purulent discharge	Do.
18	M	5	Both conjunctivæ inflamed, slight muco-purulent discharge	Child died 31/3/20, at 28 days.
19	F	8	Left conjunctiva swollen and inflamed	Cured.
20	M	7	Both conjunctivæ inflamed	Do.
21	M	1	Severe conjunctival inflammation and chemosis, both eyes purulent discharge	Do.
22	F	9	Both conjunctivæ inflamed, thin watery discharge	Do.
23	F	5	Both conjunctivæ swollen and inflamed, purulent discharge	Do.
24	M	9	Both conjunctivæ swollen and inflamed, purulent discharge	Do.
25	M	5	Both conjunctivæ swollen and inflamed, purulent discharge	Do.
26	F	9	Both conjunctivæ swollen and inflamed, purulent discharge	Do.
27	M	12	Right conjunctiva inflamed, purulent discharge. Left eye affected later	Do.

28	F	11 days	Both conjunctivæ inflamed, no discharge	...	...	...	Cured.
29	F	"	Both conjunctivæ inflamed, slight purulent discharge	...	...	...	Do.
30	M	"	Both conjunctivæ inflamed and swollen, slight purulent discharge	...	...	...	Do.
31	F	20	Both conjunctivæ inflamed and swollen, slight discharge	...	...	...	Do.
32	M	7	Both conjunctivæ inflamed and swollen, slight purulent discharge	...	...	...	Do.
33	M	9	Both conjunctivæ swollen and inflamed, copious purulent discharge	...	...	...	Do.
34	M	7	Right conjunctiva swollen and inflamed, slight purulent discharge	...	...	...	Do.
35	M	14	Left conjunctiva swollen and inflamed, slight purulent discharge	...	...	...	Do.
36	M	5	Both conjunctivæ inflamed and slightly swollen, no discharge	...	...	...	Died 14/6/20, Prematurity, <i>et</i>
37	M	8	Both conjunctivæ inflamed, slight discharge	...	...	...	15 days
38	F	4	Both conjunctivæ inflamed, slight discharge	...	...	...	Cured.
39	F	10	Right conjunctiva swollen and inflamed, slight discharge	...	...	...	Do.
40	F	4	Both conjunctivæ inflamed, slight discharge	...	...	...	Do.
41	M	10	Both conjunctivæ inflamed and swollen, purulent discharge	...	...	...	Do.
42	M	8	Both conjunctivæ inflamed and swollen, little purulent discharge	...	...	...	Right eye, no damage.
43	M	3	Both conjunctivæ inflamed and swollen, copious purulent discharge	...	...	...	Left eye, corneal opacity.
44	M	9	Both conjunctivæ inflamed, practically no discharge	...	...	...	Cured, no damage.
45	M	7	Both conjunctivæ inflamed and swollen, moderate amount of discharge left eye, small amount right eye	...	...	...	Do.
46	F	7	Both conjunctivæ inflamed, slight muco-purulent discharge, relapsed with purulent discharge	...	...	...	Do.
47	F	9	Both conjunctivæ slightly swollen and inflamed, purulent discharge	...	...	...	Do.
48	F	10	Both conjunctivæ swollen and inflamed, purulent discharge	...	...	...	Do.
49	F	10	Twins { Both conjunctivæ swollen and inflamed, purulent discharge, right eye subsequently infected	...	...	...	Do.
50	M	3	Right conjunctiva inflamed. Small cut near outer canthus, injury during instrumental delivery	...	...	...	Do.
51	M	7	Both conjunctivæ inflamed, no discharge	...	...	...	Died, gastro-enteritis, 14 days.
52	F	3	Eyes clear, no discharge	...	...	...	—
53	M	10	Right conjunctiva inflamed, slight discharge	...	...	...	Cured, no damage.
54	F	6	Both conjunctivæ slightly inflamed, eyelids crusted with exudate	...	...	...	Do.
55	M	8	Both conjunctivæ inflamed, slight discharge	...	...	...	—
56	F	11	Both conjunctivæ slightly inflamed, no discharge now	...	...	...	—



## MEASLES.

By the effect of an Order issued by the Ministry of Health at the end of 1919, Measles was removed from the list of notifiable diseases as from 1st January, 1920.

The Health Visitors investigated all cases of Measles which were brought to my notice from other sources, viz., school nurses, school teachers, attendance officers, health visitors, and in various other ways, and gave instructions and help to parents as to the isolation of the sick children, upon the nursing and the prevention of spread of infection to other members of the house, particularly young children.

27 primary visits and 53 subsequent visits were paid by the Health Visitors in connection with this disease.

4 deaths were certified as being due to Measles.

## WHOOPING COUGH.

During the year 200 notifications relating to Whooping Cough were received from sources similar to those in the case of Measles, as compared with 93 in 1919.

11 deaths were certified as due to this disease, 6 of the children being under one year of age, 2 aged 1—2 years, 2 aged 2—5 years, and 1 over 5 years. In one instance the death took place in the City of a patient whose home was in a district outside.

241 visits were paid by the Health Visitors to patients suffering from this disease.

Whooping Cough is a disease which appears in epidemic form every two or three years, but as it is not notifiable it is impossible to arrive at any estimate of the actual number of cases which occur in the City.

Like Measles, this disease is regarded by parents as a minor ailment, and in most cases little or no effort is made to isolate the patient or prevent the spread of infection. This popular conception of Whooping Cough is unfortunately far from the truth, as the disease is one

of the most serious and fatal diseases which occur among infants and young children, as the following table of deaths from this cause during the past ten years shows:—

### Deaths from Whooping Cough.

Ages.	Under 1 year.	1—2 years.	2—5 years.	Over 5 years.	Total.
1911	10	10	...	1	21
1912	7	3	7	1	18
1913	4	1	2	...	7
1914	7	...	1	1	9
1915	12	9	2	...	23
1916	...	...	...	...	...
1917	2	...	...	...	2
1918	20	8	4	2	34
1919	...	...	1	...	1
1920	6	2	2	1	11

From the foregoing table it will be observed that 68 of the cases, or 54 per cent., occurred during the first year of life. During the year 1918 this disease was responsible for 19.4 deaths among every 1,000 children born in that year, and, with the exception of death from premature birth, was the certified cause of the greatest number of deaths among infants. As the mortality from Whooping Cough decreases rapidly as age advances, it is of vital importance to protect young children from infection as long as possible. If the public ever appreciate the danger of this disease to infants and young children, parents may then, by reason of this opinion, be obliged to take adequate precautions to prevent the spread of infection to others, and if this were done a considerable saving of young lives would be effected.

Many children whose lives are now sacrificed might be saved even by the modest attempt at nursing which could be carried out in their own homes or by removal to hospital when the condition is complicated by bronchopneumonia, but I am not sanguine enough to hope for much alteration in the apathy and callousness of certain parents unless and until Whooping Cough is made compulsorily notifiable.

In addition to the high mortality among young children, Whooping Cough is responsible for much ill-health among the survivors, and it is found that in many cases of tuberculosis in children the ill-health dates from a previous attack of Whooping Cough.

All cases of Whooping Cough brought to my notice are visited by the Health Visitors, who advise the parent with regard to the nursing and isolation of the case, and point out the dangers of the disease, especially in the case of young children, but owing to the absence of compulsory notification many cases occur of which I have no knowledge until death takes place.

### CHICKENPOX AND MUMPS.

During the year 276 notifications relating to Chickenpox and 273 relating to Mumps were received from similar sources to the foregoing disease.

23 special visits were paid by the Health Visitors to children under the age of 5 years suffering from these diseases.

### DIARRHŒA.

During the year 19 deaths were registered as due to diarrhœa and enteritis, as against 18 during 1919. The mortality rate from the disease was .33 per 1,000 living at all ages.

Table showing the age distribution of deaths from Diarrhœal Disease.

Ages ...	0 to 1	1 to 2	2 to 5	5 to 15	15 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 to 75	75 to 85	85 and over
Diarrhœa	2	...	...	...	...	...	...	...	1	...	...	...
Enteritis	5	2	..	...	...	...	1	...	1	...	..	...
Gastro-en- teritis	5	2	...	...	...	...	...	...	...	..	...	...
Total	12	4	...	...	...	...	1	...	2	...	...	...



## POLIOMYELITIS.

Two notifications relating to poliomyelitis were received, but in one instance the diagnosis was incorrect.

## RATS & MICE (DESTRUCTION) ACT, 1919.

The provisions of the above Act have been brought to the notice of all owners or occupiers of business and other premises likely to be infested with rats and mice by means of posters and the following handbill, which contain information as to the most suitable method of destroying rats and mice.

### Rats and Mice (Destruction) Act, 1919.

#### PENALTIES FOR FAILURE TO DESTROY RATS AND MICE.

Any person who shall fail to take such steps as may from time to time be necessary and reasonably practicable for the destruction of rats and mice on or in any land of which he is the occupier, or for preventing such land from becoming infested with rats and mice, shall be liable on summary conviction to a fine not exceeding five pounds, or where he has been served with a notice under this Act requiring him to take such steps, not exceeding twenty pounds.

The expression "occupier" means, in the case of land not occupied by any tenant or other person, the owner of the land.

The expression "land" includes any buildings, and any other erection on land, and any cellar, sewer, drain, or culvert in or under land.

#### METHODS AND PREVENTIVE MEASURES.

The most effective methods for destroying rats and mice embrace the use of traps, snares, ferrets, dogs, fumigation, and the use of poisons. The safest poisons have been found to be preparations of Squills and Barium Carbonate. Poison should be laid in such a way that human beings, domestic animals, poultry, &c., cannot obtain access to it. The laying of baits containing any poison should be carried out with the utmost care. The actual amount laid in each single rat hole or burrow should be as small as possible to obtain the results aimed

at. The position of these places should be noted, and any dead rats found afterwards should be burnt or destroyed, to prevent domestic animals getting at the carcasses. Previous to the laying of poisons, the owners of poultry, dogs, pigs, and other animals frequenting or likely to come near places where poison has been laid should be warned, and after an interval of a few days all unconsumed baits should be removed and destroyed.

Attention should be specially directed to all drains, waste food, and grain stores, &c.

Persons desiring any further information on the subject, or experiencing any difficulty in obtaining suitable material for the purpose, should apply to The Public Health Department, 19 Fisher Street, Carlisle.

The following have been found to be most useful recipes for rat poison:—

(1)	Barium Carbonate	...	...	6	ozs.
	Oatmeal or Flour	...	...	16	„
	Dripping	...	...	4	„
	Salt	...	...	$\frac{1}{2}$	oz.

Mix the Barium Carbonate and Meal to a paste with the Dripping. This makes one thousand baits, each as large as a hazel nut.

(2)	Barium Carbonate	...	...	4	ozs.
	Oatmeal or Flour	...	...	4	„
	Oil of Aniseed	...	...	5	drops

Mix with sufficient fat to make a stiff paste, and lay out in places where rats are known to be present, in pieces the size of a hazel nut. The mixture should be freshly made when laid, as it deteriorates on keeping.

No evidence of the presence of numbers of rats and mice on any land has been brought to my notice, and in instances in which an owner or occupier has applied for information or advice all possible assistance has been given.

No intensive campaign against rats in the City has been undertaken, and such a campaign would be useless in the absence of simultaneous action by the County Council in respect of rats in the adjacent county area.

## REPORT OF THE VETERINARY INSPECTOR.

During the past year 221 newly-purchased cows were examined in the several byres of the City, amongst which the following conditions were found:—

Diseases of the Udder	...	...	...	4
Septicæmia	...	...	...	2
Blood in Milk	...	...	...	1
Disease of Lungs	...	...	...	1
Tuberculosis of Eye	...	...	...	1
Tumour in Teat	...	...	...	1
				<hr/>
				10
				<hr/>

These 10 animals were returned to the sellers.

The bovine animals exposed for sale at the Sands Cattle Market, and also at the Auction Marts, were examined, a total of 67,965 such examinations being made.

The Auction Marts were visited each Monday in the year, and 6,349 pigs were examined.

Sixteen carcasses of beef, 3 carcasses of mutton, and 1 carcase of pork were examined at the Public Abattoir. With the exception of three quarters of beef, I certified the whole to be unfit for human consumption.

A total of 4,244 examinations of milk cows were made in the several byres of the City, in order to ascertain the presence of disease likely to affect the milk supply, in the course of which the following conditions were found:—

Gastric Derangement	...	...	...	7
Septicæmia	...	...	...	5
Milk Fever	...	...	...	2
Chill	...	...	...	1
Acute Pulmonary Tuberculosis	...	...	...	1
Chronic Gastric Tympany	...	...	...	1
Ulceration of Bowels	...	...	...	1
				<hr/>
				18
				<hr/>



In the case of one animal suffering from gastric derangement, another from chronic gastric tympany, and a third from acute tuberculosis, I advised the owners that these animals should be slaughtered, to which suggestion they agreed. The milk of the other 15 was destroyed until convalescence was established.

The Corporation horses, 20 in number (including one used by the Committee of the Burial Board), have been under close observation during the year. Two horses received accidental injuries, which in one instance necessitated the slaughter of the animal, while in the other the horse was sold.

I received an intimation from the City Police that a stray dog was behaving in a suspicious manner. This dog, having taken refuge in a shop, refused to leave, and when approached by anyone it attempted to bite the person. On examination I found the animal excited, the pupils of both eyes dilated, and saliva trickling from its mouth.

As certain administrative orders had to be carried out, I ordered the dog to be shot. Its brain was then forwarded to the laboratory of the Ministry of Agriculture and Fisheries for bacteriological examination. The Chief Veterinary Officer reported that the case was not one of rabies.

I received notices that 10 horses were suffering from skin disease. I took scrapings of the animals' skins for microscopical examination, and the results were as follows:—

Negative	...	...	...	...	...	6
Psoroptic Mange	...	...	...	...	...	4

As one of the latter animals was very old and of little value, I advised slaughter, to which course the owner consented.

As certain administrative orders had to be carried out, I had the other three animals isolated and treated, and periodically examined until free from infection.

I received notice that a bullock had been found dead in a field within the City boundary. As certain adminis-

trative procedure must be carried out, I examined the carcase and took samples of blood for microscopical examination, which gave negative results for anthrax. I found that the animal had died from black quarter.

I received notice from the Chief Constable that Mr. J. G. Bell, M.R.C.V.S., had reported a suspected case of foot and mouth disease amongst cattle grazing in a field at St. Ann's Hill. The matter had been reported to the Ministry of Agriculture and Fisheries, who sent one of their own Inspectors to examine the cattle. He certified that the disease was not foot and mouth disease. Previous to the arrival of the Inspector I had made all necessary arrangements and had the requirements of the Order of the Ministry strictly carried out.

I received notice that an in-calf cow had died suddenly in a field within the City. I examined the carcase and took samples of blood for microscopical examination, which gave negative results for anthrax. On making a post-mortem examination of the carcase I found the cause of death to be internal hæmorrhage, caused by rupture of the pulmonary artery.

I received notice that a cow had aborted in one of the Auction Marts. On examination I found the case to be one of epizootic abortion. I drew the attention of the auctioneers to the animal, and reminded them that epizootic abortion is a scheduled disease, and that the animal must not be offered for sale. The animal was isolated and afterwards taken home by the owner, the stall and the byre being subsequently cleansed and disinfected.

## HOUSING.

### I—GENERAL HOUSING CONDITIONS IN THE DISTRICT.

(1) Number of houses	...	...	...	...	11,919
Number of houses for the working-classes...					7,761
Number of houses erected during the year	...				27
Number of houses in course of erection	...				98
(2) Population (Registrar's estimate, 1920)	...				57,697

There has been no change in the population during the past year, nor is any change anticipated in the future.



(3) (a) The shortage of houses is estimated at 600, which are required to meet the unsatisfied demand for houses, due to the natural growth of the population.

(b) A programme for building 600 houses as quickly as possible to meet this demand has been commenced. There is also a scheme under consideration for providing a further supply of houses for the accommodation of families who will be displaced during the re-modelling or any other improvement of slum areas.

## II—OVERCROWDING.

(1) The number of tenements with more than two occupants per room, according to the census of 1911, was 1,148, the total number of occupiers in these tenements being 8,107.

(2) This overcrowding is to a great extent due to the natural increase of the population, combined with the lack of building enterprise since 1906. Since that year only 218 dwelling-houses have been erected in the City of Carlisle. Between the years 1911 and 1914 a large number of houses which were either unfit for human habitation or were obstructive buildings were demolished, and this action has added to a certain extent to the overcrowding in the City.

(3) The overcrowding will be dealt with, firstly, by the building of new houses, and, secondly, by the re-modelling and enlarging of the existing small tenement dwellings.

(4) No action has been taken with regard to overcrowding during the past year, as it is impossible until new houses are built to displace families from their present dwellings.

## III—FITNESS OF HOUSES.

(1) (a) The general standard of housing in the district is good, except in certain limited slum areas, which have been the subject of representations to the Council and will be dealt with as soon as possible.

(b) Apart from houses which cannot be made habitable owing to the serious sanitary defects, the defects found are minor dilapidations, &c., due to the usual wear and tear and the lack of normal repairs during the period of the war. These minor defects are being dealt with under the Public Health Act.



(2) Information as to the action taken as regards unfit houses under the Public Health Acts is contained in the report of the Sanitary Inspector on page 99.

(3) Difficulty has been experienced in remedying more serious defects found in houses, owing to the impossibility of the tenants being able to vacate the houses while defects were remedied. Scarcity of materials and the difficulty of obtaining labour, which has been felt all over the country, has also been responsible for the tardiness of this work in Carlisle. This work will be proceeded with as soon as sufficient new houses have been built to permit of the inhabitants of the houses which it is proposed to deal with being provided with housing accommodation.

(4) Information with regard to the water supply, closet accommodation, and refuse disposal has been given on pages 22 to 25 and 104.

#### IV—UNHEALTHY AREAS.

(1) No areas were being dealt with under Part I and Part II at the beginning of the year, and consequently no action has been taken under these parts of the Housing Act of 1890.

(2) During the year a careful house-to-house inspection was made of three areas in the City, viz., the Rickergate or Northern, the Crown Street or Southern, and the Caldewgate or Western Area, and representations were made to the City Council in respect of these areas in accordance with Sections IV and V of the Housing Act of 1890.

The Rickergate or Northern Area covers about  $7\frac{1}{4}$  acres and lies on either side of Rickergate, one of the principal entrances to the City from the North. The area comprises 149 dwelling houses, but in addition there are a large number of business premises, shops, and warehouses, comprising about 50 per cent. of the buildings in the area. The total number of inhabitants of these houses is 735, an average of 4.9 per dwelling. Of the 149 dwelling-houses, only 20 conform to the standard of fitness laid down in the recent regulations of the Ministry of Health, 42 dwellings are totally unfit for human habitation owing to extensive dilapidations, want of light, and ventilation, or other defects, and cannot be made fit for human habitation.

13 houses are unfit by reason of dilapidations which can be altered and repaired and the houses made to conform to the standard of the Ministry of Health. With regard to the remaining 74 houses, whilst these are not unfit for habitation from a structural point of view, they are more or less unfit by reason of insufficient ventilation, the absence of free circulation of air, and the lack of sanitary or other conveniences, &c.

A number of houses in this area have already been dealt with and have been closed or demolished.

This representation was considered, and after a conference between the Health Committee and a representative of the Housing Commissioner it was decided not to declare the area an area under Part I of the Housing Act of 1890, but to deal with it by means of closing and demolition orders as soon as practicable.

The Crown Street or Southern Area covers about  $19\frac{1}{4}$  acres, and lies to the West of the Citadel Station, and comprises 576 dwelling-houses, with a population of 2,283 persons, an average of 3.9 per dwelling.

Of these 576 dwellings only 55 conform to the standard of fitness prescribed by the recent regulations of the Ministry of Health. 54 are totally unfit for human habitation by reason of extensive dilapidations, want of access, air, and ventilation, &c., and in my opinion cannot be made fit for habitation. 49 houses are unfit for human habitation owing to dilapidations or structural defects which are remediable, and could be made to conform reasonably with the standard of the Ministry of Health. With regard to the remaining 418 houses, whilst they are not unfit for habitation from a structural point of view, they are more or less unfit by reason of inadequate ventilation, the absence of free circulation of air, and the lack of sanitary or other conveniences.

A particular feature of some of the houses is the tenement type, which predominates in Crown Street and Union Street, a typical example being a six-roomed house, the ground floor tenants occupying one room each and the first floor tenants two rooms each.

An improvement scheme would necessitate the demolition of the 54 houses already mentioned as being



incapable of remedy, and the conversion and re-arrangement of the remaining houses, and so far as one is able to foresee this would result in approximately 50 per cent. of the population represented by 225 families, or 900 persons, being dehouseed.

On consideration of the representation the Council were of the opinion that the area was one to which the provisions of Section 39 of the Housing Act of 1890 applied, and resolved that schemes be prepared for the improvement of the three parts of the area.

The Caldewgate or Western Area comprises 312 dwellings, with a population of 1,226 persons, an average of 4.2 per dwelling.

Of these 312 dwellings, 18 are already closed, 62 conform to the standard of fitness prescribed by the regulations of the Ministry of Health, 3 are totally unfit for human habitation by reason of extensive dilapidations, want of light and ventilation, and other defects, and cannot be made fit for habitation; 207 dwellings are unfit by reason of dilapidations but can be altered and repaired and made to conform to the standard of the Ministry of Health. With regard to the remaining 22 houses, whilst they are not unfit for habitation from a structural point of view, they are more or less unfit by reason of inadequate ventilation, the absence of free circulation of air, and the lack of sanitary or other conveniences.

Apart from the question of insanitary dwelling houses, the area requires improvement in other respects, having regard to the congestion of the houses on the site, combined with the bad arrangement of the lanes and courts.

The Council, on consideration of the representation, were of the opinion that the area was one to which the provisions of Section 39 of the Housing Act of 1890 applied, and resolved that a scheme be prepared for the improvement of the area.

There are no bye-laws in force in the City relating to houses let in lodgings, or to tents, vans, sheds, &c.

The subjoined table gives particulars relating to certain houses dealt with during 1913, 1914, and 1916,



in connection with which certain matters require to be done.

Number and Situation.	Date represented to Committee.	Date of Closing Order served under Housing, Town Planning, &c., Act, 1909	Date of Demolition Order served under Housing, Town Planning, &c., Act, 1909	Remarks.
1, 2, 3, 4, 5, 6, 7, & 9 Barley Stack Lane	21st Nov. 1913	9th Dec., 1913	10th June, 1914	Part of the property demolished, the other part still standing
12, 14, 16, 18, 22, 26, & 28 Chapel Street	19th June, 1914	15th July, 1914	14th Sept., 1915	<i>In statu quo</i>
5 houses in Donald's Court, Willow Holme	19th June, 1914	15th July, 1914	14th Sept., 1915	Do.
3 houses, Willow Holme	19th June, 1914	15th July, 1914	14th Sept., 1915	Do.

Table showing number of dwelling houses erected in the City from 1891 to 1920, inclusive.

Year.	No. of Houses erected.	Year.	No. of Houses erected.
1891	149	1906	183
1892	81	1907	42
1893	148	1908	27
1894	184	1909	7
1895	176	1910	23
1896	198	1911	11
1897	217	1912	11
1898	208	1913	18
1899	226	1914	38
1900	262	1915	9
1901	181	1916	1
1902	178	1917	2
1903	170	1918	0
1904	269	1919	2
1905	181	1920	27

## HOUSING CONDITIONS.

## STATISTICS.

*Year ended 31st December, 1920.*

## 1.—GENERAL.

(1) Estimated population	...	...	57697
(2) General death-rate (corrected)	...	...	12·3
(3) Death-rate from tuberculosis	{	Pulmonary	0.63
		Non-pulmonary	0.26
(4) Infantile mortality	...	...	80
(5) Number of dwelling houses of all classes	...	...	11919
(6) Number of working class dwelling houses	...	...	7761
(7) Number of new working-class houses erected	...	...	27

## 2—UNFIT DWELLING HOUSES.

1.—*Inspection.*

(1) Total number of dwelling houses inspected for housing defects (under Public Health or Housing Act) ...	...	3254
(2) Number of dwelling houses which were inspected and recorded under the Housing (Inspection of District) Regulations, 1910 ...	...	2599
(3) Number of dwelling houses found to be in a state so dangerous or injurious to health as to be unfit for human habitation ...	...	138
(4) Number of dwelling houses (exclusive of those referred to under the preceding sub-heading) found not to be in all respects reasonably fit for human habitation ...	...	952

2.—*Remedy of Defects without Service of formal Notices.*

Number of defective dwelling houses rendered fit in consequence of informal action by the Local Authority or their officers	...	...
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3.—*Action under Statutory Powers.*

## (a) Proceedings under Section 28 of the Housing, Town Planning, &amp;c., Act, 1919—

(1) Number of dwelling houses in respect of which notices were served requiring repairs	...	...
(2) Number of dwelling houses which were rendered fit		
(a) By Owners	...	...
(b) By Local Authority in default of Owners	...	...
(3) Number of dwelling houses in respect of which Closing Orders became operative in pursuance of declarations by Owners of intention to close	...	...

## HOUSING CONDITIONS—continued.

(b) Proceedings under Public Health Act—				
(1)	Number of dwelling houses in respect of which notices were served requiring defects to be remedied	...	...	108
(2)	Number of dwelling houses in which defects were remedied			
(a)	By Owners	...	...	92
(b)	By Local Authority in default of Owners	...	...	...
(c) Proceedings under Sections 17 and 18 of the Housing, Town Planning, &c., Act, 1909—				
(1)	Number of representations made with a view to the making of Closing Orders			...
(2)	Number of dwelling houses in respect of which Closing Orders were made	...		...
(3)	Number of dwelling houses in respect of which Closing Orders were determined, the dwelling houses having been rendered fit	...	...	...
(4)	Number of dwelling houses in respect of which Demolition Orders were made	...	...	...
(5)	Number of dwelling houses demolished in pursuance of Demolition Orders	...		...
3.—UNHEALTHY AREAS.				
Areas represented to the Local Authority with a view to Improvement Schemes under (a), Part I., or (b), Part II., of the Act of 1890 :—				
(1)	Name of area—Rickergate, Crown-St., Caldewgate			
(2)	Acreage	7 $\frac{1}{4}$	19 $\frac{1}{4}$	51 77 $\frac{1}{2}$
(3)	Number of working-class houses in area	149	576	312 1037
(4)	Number of working-class persons to be displaced	568	900	118 ... 1586
4.—Number of houses not complying with the building bye-laws erected with consent of Local Authority under Section 25 of the Housing, Town Planning, &c., Act, 1919 ...				

I have the honour to be,

Your obedient Servant,

Public Health Department,

JOSEPH BEARD.

19 Fisher Street, Carlisle.

May, 1921.



# Chief Inspector's Annual Report.

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TO THE CHAIRMAN AND MEMBERS OF THE HEALTH  
COMMITTEE.

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I have pleasure in presenting to you my annual report upon the work of the Sanitary Inspectors during the year 1920.

## HOUSING.

The year has not been in any way an exceptional one, but it may be remarked that the large number of inspections, made under the Housing (Inspection of District) Regulations, entailed much time and labour on the part of the staff.

Considerable progress has been made in the compilation and scheduling of information relative to the housing of the people, and particulars of representations to the Health Committee will be found in the Medical Officer of Health's report.

In this connection 108 notices were served requiring the execution of minor repairs necessary to make houses reasonably fit for human habitation, and much difficulty was experienced in the enforcement of these notices, as, with the present high cost of labour and materials, there is little prospect of owners securing a reasonable return upon outlay

## DRAINAGE.

The amount of drainage and other sanitary constructional works to existing property has been small, but drains were examined and tested at 36 premises and new drainage supervised at 10 houses.

## NUISANCES.

Some 154 complaints of nuisances were received during the year, enquiry into the circumstances being made in every case and the necessary action taken. 355 notices were served requiring the abatement of nuisances.

Considerable trouble is frequently caused by householders who persist in keeping poultry, &c., in such a manner as to become a nuisance, and we have had to take somewhat drastic measures to remove the cause.

While there is every desire to encourage people in their hobbies, it is essential that they should be conducted without giving rise to nuisance and annoyance to neighbours. Unfortunately the space at the rear of most of the houses in this city is limited, and to erect hen coops, &c., is to at once infringe the bye-laws relating to open spaces, and also to further restrict the space required for domestic purposes.

### VAN DWELLINGS.

The caravans visiting the City are invariably accommodated on "The Sands," and at fair times, in particular, inspections have been made. There has been little cause for complaint. Careful enquiry is made of the occupiers of the vans, and in no case had we any reason to suspect that the presence of the vans was likely to cause or assist in the dissemination of any infectious disease.

### STABLE PREMISES.

With the main object of combating the fly nuisance, 44 visits were paid to stable premises, especially in the hot weather, and periodic removal of manure insisted upon. Many of the middens are uncovered and nuisance is likely to arise if removal of accumulations is delayed. In the majority of cases, however, horsekeepers realised their obligations in this matter, and we had no difficulty in keeping their premises reasonably clean. With the increasing use of the motor, stable premises are rapidly decreasing in number, more particularly in the centre or congested parts of the City.

### COMMON LODGING-HOUSES.

Previous to December there were two common lodging-houses in the City, which were inspected from time to time. One of the buildings (Lowther House) is now owned by the Corporation. The building, which is situated in Lowther Street, was erected between 20 and 30 years ago, and is in every respect suitable for the purpose for which it is licensed.

The one in Drover's Lane was totally unfit for receiving lodgers in consequence of structural dilapidations, and the licence was accordingly withdrawn as from the 31st December. The lodgers from this house can be received at Lowther House, as there is ample accommodation in that building for the present needs of the City.



## WATER SUPPLIES.

In the routine inspection of the City waste of water was frequently observed upon premises, and 43 notices were sent to the Water Engineer concerning defective water fittings.

## FACTORIES AND WORKSHOPS.

The number of workshops on the register is 211, and that of factories, 90. They have been visited on one or more occasions and were found, generally, to be satisfactorily kept. Twelve notices were served requiring the abatement of nuisances arising from uncleanness or slight structural defects.

I received 8 notices from His Majesty's Inspector of Factories relating to sanitary accommodation, &c., and these received prompt attention.

Five lists of out-workers were received in accordance with the Factory and Workshop Act.

## BAKEHOUSES.

There are on the register 52 bakehouses, including 17 domestic and 3 public bakehouses. (By "public" bakehouse is meant a place where no making-up is done, but where an oven is used only for baking articles of food brought by householders). Very frequent inspections were made of these places, and periodical lime-washing and cleanliness were strictly enforced. Three of the bakehouses are underground. The chief difficulty experienced is that of minimising the amount of dust circulating in the air of bakehouses, and the most satisfactory in this respect are those where coke ovens are fired from a separate stoking compartment.

## SMOKE NUISANCE.

Whilst there would appear to be little cause for alarm from air pollution by coal smoke, it has from time to time been necessary to warn certain firemen, both at factories and on the railway, against the emission of volumes of black smoke from boiler and locomotive chimneys within the City. These incidents often arise from improper and wasteful firing, which result in dense smoke. Warnings of the kind given have usually had the desired effect.

The usual complaint of inferior coal was advanced by the offending firemen as being the cause of unnecessary smoke, and whilst I am inclined to agree that it was a contributory cause, I am of opinion that a great amount of black smoke emitted from factory chimneys might be obviated by more careful and regular firing.



## INSPECTION OF MEAT & OTHER FOODS: PUBLIC MARKETS, &c.

This important subject receives the strict attention it deserves, and the nature and quantity of food-stuffs condemned is recorded at the end of the report. Frequent inspection of the market stalls and shops exhibiting food-stuffs is carried out in addition to the inspection of meat at the slaughter-houses.

The manufacture of meat foods upon traders' premises is kept under observation, frequent inspections being made of these premises. Cleanliness of boilers and utensils is essential to the proper conduct of the trade.

In most instances the premises where the manufacture of these food-stuffs is carried on are satisfactory in character; in a few instances, however, the premises have been improvised for the purpose and are scarcely adapted for conducting the business in a satisfactory manner. Several traders complain of the difficulty in obtaining, at the present time, premises in any way suitable for their business. All that can be done, by way of frequent inspection and suggestion, is done, and your inspectors endeavour to see that these goods are prepared in the best manner possible, under adverse conditions.

### SLAUGHTER-HOUSES.

The usual frequent inspection of the Public Abattoir has been maintained and the place has been kept in a satisfactory condition.

In September last the Live Stock Commissioners relinquished their control of slaughtering at the establishment and almost normal conditions have returned.

Slaughtering re-commenced at the Railway Slaughter-houses (North-Eastern and Midland) in November, and irregular inspections have been made. The premises, particularly those of the North-Eastern, are unsuitable for slaughtering purposes, and it is satisfactory to know that the latter will cease to be used as a slaughter-house at the end of 1921. The Midland Railway Slaughter-house, being more remote from dwelling houses, does not present the marked objections presented by the North-Eastern, but it will be necessary for considerable structural alterations to be carried out if the premises are to be used as a slaughter-house after 1921.

Particulars as to the nature and number of animals dealt with will be found in the appendix.

## DAIRIES, COWSHEDS, AND MILKSHOPS.

The whole of the 27 cowsheds have received the attention of your Inspectors, and lime-washing and general cleanliness has been the rule. Structurally, the cowsheds (with three exceptions) are good.

Milkshops have called for frequent attention, especially in the summer months, and the managers of some of these shops still show some reluctance in providing covers for milk storage vessels. These covers are a very necessary provision, as they prevent the milk from becoming contaminated by flies and impurities suspended in the air. There are 10 milkshops on our register.

## FRIED FISH AND POTATO SHOPS.

This business is conducted at some 25 premises in the City. Much has been done to minimise the nuisance inseparable from this trade by frequent inspection, insisting upon the removal of offensive matter, and general cleanliness. The quality of food prepared under this heading is very good.

## ICE-CREAM SHOPS.

The premises, numbering 7, upon which this commodity is prepared are subjected to regular inspection, more especially during the summer season. Every effort is made by your Inspectors and by the vendors themselves to secure strict cleanliness.

## OFFENSIVE TRADES.

The offensive trades in the City consist of one gut-scrapers, two tripe dressers, one tanner, and one fellmonger.

Numerous visits have been made to the premises, and the business in each instance has been conducted in a satisfactory manner.

## FOOD AND DRUGS ACTS.

Under the provisions of these Acts I purchased a total of 128 samples (see appendix for details).

One sample of butter contained an excess of 12.4 per cent. of water, and one an excess of 1.8 per cent. of water. The former sample was purchased informally and therefore no proceedings could be taken against the vendor. The latter sample, however, was formally purchased from the same vendor, upon receipt of the Analyst's certificate



respecting the first sample, and proceedings were instituted in this instance. The case was, however, dismissed on payment of costs.

Five samples of milk were found not to conform with the standard prescribed by the Board of Agriculture, either in fats, solids not fats, or both. Four samples were purchased from one vendor and the deficiencies being small, and occurring in both fats and solids not fat, it was thought advisable to make an "appeal to the cow." This was accordingly done and a sample obtained from the herd. The deficiency in this sample was in the solids not fat, and in reviewing the circumstances of the whole of the five samples, the Analyst gave it as his opinion that the samples should be considered "genuine," as in all probability the deficiencies were due to the cows and not to the seller.

Two wholesalers of margarine and one butter blender were registered with the Sanitary Authority during the year.

### REFUSE REMOVAL.

The removal of house refuse, &c., is carried out on the same principle as in previous years; the central portion of the City has a daily collection and the other portions a thrice-weekly collection. The whole of the refuse is disposed of by tipping at the several tips on the outskirts of the City. These tips are properly formed and kept soiled, thus reducing the area of refuse exposed to a minimum. The tips serve a very useful purpose in reclaiming low lying lands, claypits, &c., and are conducted in such a manner as to be free from nuisance.

The refuse from the Slaughter-house, consisting of garbage and manure, amounting to 415 loads, has also been disposed of at the refuse tips. This method of disposal, viewed from the economic standpoint, appears to be very wasteful, as the whole of this so-called waste if properly treated has a high commercial value. In its present crude condition it is rejected by farmers, and in the absence of proper plant with which to treat it on commercial lines, it has to be disposed of by the method indicated above.

The present cost of the removal of the garbage is in the region of £50 per annum, and I am of opinion that the time has arrived when the question of the installation



of a small digester for the treatment of the refuse on commercial lines should be considered.

### DEPOT.

The stud of horses at the dépôt, Boustead's Grassing, numbers 19; part of the stud is used for house refuse removal work, and the remainder for scavenging, &c. During the year one horse died, 4 were sold as being unfit for further use, and 5 purchased to replace those disposed of. The number of disposals and replacements is higher than has occurred in previous years.

### SHOPS ACT.

The closing hours of shops are regulated by the several Closing Orders made under the Shops Act, 1912; and also by the Defence of the Realm Regulations. With respect to the majority of shops in the City the closing hours are earlier than those prescribed by D.O.R.A.

The provisions of D.O.R.A. were, until 3rd December, carried out by the Police, from which date the duties devolved upon the Shops' Inspector for the City. The number of shops upon the register is 769. The closing hours, under the Closing Orders, are, Monday, Tuesday, and Wednesday, 7 p.m.; Thursday, 1 p.m.; Friday, 8 p.m., and Saturday, 9 p.m. Those shops which are not regulated by Closing Orders are subject to the Shops (Early Closing) Act, 1920, which superseded D.O.R.A., and which fixes 8 p.m. for every evening except Saturday, when the closing hour is 9 p.m.

Numerous day and evening inspections were made, and in a few instances the occupiers of shops were cautioned for slight infringements.

### INFECTIOUS DISEASE & DISINFECTION.

The Inspectors were called upon to investigate 175 cases of infectious disease, and of these 78 were removed to hospital for isolation.

All the houses from which the cases were removed to hospital, and also rooms where patients were isolated at home, were either sprayed with formaldehyde or cleansed under the supervision of your Inspectors.

During the year we were called in to disinfect Fusehill War Hospital after its vacation by the Military Authorities.

The number of articles of bedding, clothing, &c., disinfected is set out in the appendix.

SALE OF FOOD AND DRUGS ACTS.

Table showing Articles purchased during the year, with results of Analyses and remarks as to action taken thereon.

Article.	No. of Samples.	No. found to be Genuine.	Number Adulterated.	Extent and Form of Adulteration.	Remarks.																								
Baking Powder	18	18	...	...	...																								
Lard ...	17	17	...	...	...																								
Coffee ..	15	15	...	...	...																								
Self-raising Flour	5	5	...	..	...																								
Butter ...	21	19	2	Moisture exceeded limit to the extent of— (a) 12·4 per cent. (b) 1·8 per cent.	Informal sample. Formal sample. Vendor prosecuted. Case dismissed on payment of costs.																								
Milk ...	52	47	5	<table><tr><td></td><td></td><td>Fat.</td><td>Solids not Fat.</td></tr><tr><td>(a) Deficiency</td><td>·5%</td><td>·54%</td><td></td></tr><tr><td>(b)</td><td>—</td><td>·02%</td><td></td></tr><tr><td>(c)</td><td>—</td><td>·35%</td><td></td></tr><tr><td>(d)</td><td>·17%</td><td>·1%</td><td></td></tr><tr><td>(e)</td><td>—</td><td>·37%</td><td></td></tr></table>			Fat.	Solids not Fat.	(a) Deficiency	·5%	·54%		(b)	—	·02%		(c)	—	·35%		(d)	·17%	·1%		(e)	—	·37%		The samples a, b, c, and d, were formal samples, and sample e an “appeal to the cow” sample, taken from the herd. All were from one vendor. No proceedings were instituted, as the Analyst was of opinion that the adulteration was not serious, and that the fault lay with the cows and not with the seller.
		Fat.	Solids not Fat.																										
(a) Deficiency	·5%	·54%																											
(b)	—	·02%																											
(c)	—	·35%																											
(d)	·17%	·1%																											
(e)	—	·37%																											
Number of Samples taken...	128																												
Genuine ...		121																											
Adulterated			7																										

### DISEASED AND UNSOUND FOOD.

The following table shows the amount of food seized or surrendered as being unfit for human consumption:—

Nature of Food Condemned.					Quantity.
Beef ...	...	...	...	...	34,945 lbs.
Mutton	...	...	...	...	2,065 „
Pork	...	...	...	...	71 „
Veal	...	...	...	...	717 „
Condensed Milk	...	...	...	...	14 tins.
Bacon	...	...	...	...	9 lbs.
Tinned Beef, Salmon, &c.	...	...	...	...	44 tins.
Cheese	...	...	...	...	82 lbs.
Tinned Pears, Tomatoes, &c.	...	...	...	...	29 tins.
Tinned Rabbits	...	...	...	...	7 „
Prunes	...	...	...	...	35 lbs.
Relish	...	...	...	...	1 bottle.
Treacle	...	...	...	...	1 tin.
Potted Meat	..	...	...	...	5 jars.

### PUBLIC ABATTOIR.

The following tables give the number of animals killed during the years 1917, 1918, 1919, and 1920.

Year.	Beasts.	Sheep and Lambs.	Calves.	Pigs.	Total.
1917	4,166	15,609	248	3,334	23,357
1918	3,257	53,357	235	1,894	58,743
1919	3,054	57,885	815	2,451	64,205
1920	2,930	35,862	828	2,462	42,082

### MIDLAND RAILWAY SLAUGHTER-HOUSE.

10th Nov. to 31st Dec., 1920	...	1,305	...	...	1,305
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### N.E.R. SLAUGHTER-HOUSE.

6th Nov. to 31st Dec., 1920	...	3,876	...	...	3,876
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## Factories, Workshops, Workplaces, and Homework.

### 1.—Inspection of Factories, Workshops, & Workplaces.

*Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.*

Premises.	Number of		
	Inspections.	Written Notices.	Prosecutions.
Factories . . . . . (Including Factory Laundries)	146	3	...
Workshops . . . . . (Including Workshop Laundries)	453	9	...
Workplaces . . . . . (Other than Outworkers' premises included in Part 3 of this Report)	...	..	...
<b>TOTAL</b> .. ..	<b>599</b>	<b>12</b>	<b>...</b>

### 3.—Home Work.

NATURE OF WORK.	OUTWORKERS' LISTS, SECTION 107.					
	Lists received from Employers.					
	Sending twice in the year.			Sending once in the year.		
	Lists.	Outworkers.		Lists.	Outworkers.	
		Con-tractors.	Work-men.		Con-tractors.	Work-men.
Wearing apparel— Making, &c. ...	4	...	...	1	...	..
Cleaning and Washing ...	...	...	...	...	..	..
<b>Total</b> ...	<b>4</b>	<b>...</b>	<b>...</b>	<b>1</b>	<b>...</b>	<b>...</b>

## 2.—Defects found in Factories, Workshops, and Workplaces.

Particulars.	Number of Defects.			Number of Pro-secutions.
	Found.	Remedied.	Referred to H.M. Inspector.	
<i>Nuisances under the Public Health Acts :—</i>				
Want of cleanliness ... ..	11	11	...	...
Want of ventilation ... ..	2	1	...	...
Overcrowding... ..	1	...	...	...
Want of drainage of floors ...	...	...	...	...
Other nuisances ... ..	6	5	...	...
<i>Sanitary accommodation :—</i>				
{ Insufficient ... ..	1	1	...	...
{ Unsuitable or defective	7	7	...	...
{ Not separate for sexes	2	2	...	...
<i>Offences under the Factory and Workshop Acts :—</i>				
Illegal occupation of under-ground bakehouse (s. 101)...	...	...	...	..
Breach of special sanitary requirements for bakehouses (ss. 97 to 100) ... ..	...	...	...	...
Other offences ... .. (Excluding offences relating to outwork, which are included in Part 3 of this report)	...	...	...	...
Total ... ..	30	27	None	None

## 4.—Registered Workshops

Workshops on the Register (s. 131) at the end of the year		Number.
Important classes of workshops, such as workshop bakehouses, may be enumerated here.	Workshops ... ..	161
	Domestic Workshops ...	50
	Bakehouses ... ..	52
Total number of workshops on Register ...		263

## 5.—Other Matters.

Class.	Number.
Matters notified to H.M. Inspector of Factories :—	
Failure to affix Abstract of the Factory and Workshop Acts (s. 133, 1901) ... ..	..
Action taken in matters referred by H.M. Inspector as remediable under the Public Health Acts, but not under the Factory & Workshop Acts (s. 5, 1901) :	
Notified by H.M. Inspector ... ..	8
Reports (of action taken) sent to H.M. Inspector ... ..	8
Other ... ..	...
Underground Bakehouses (s. 101) :—	
In use at the end of the year ... ..	3

## Refuse Removal.

Number of Loads of House Refuse removed to Tips	16,441
,, Loads of Slaughter-house Garbage ...	415

## Disinfection.

Number of Cases of Infectious Diseases Investigated	175
,, Cases of Infectious Disease removed to Hospital ... ..	78
,, Mattresses and Beds Disinfected ...	241
,, Bolsters and Pillows ... ..	436
,, Blankets ... ..	807
,, Quilts ... ..	658
,, Carpets and Rugs ... ..	14
,, Miscellaneous Articles ... ..	550
,, Sheets ... ..	425
,, Houses Disinfected ... ..	129
,, Institutions Disinfected (264 rooms) ...	1



## Summary of Sanitary Work performed in connection with Inspection of District.

Nature of Inspections.	Number of visits paid.
<b>HOUSES—</b>	
Houses inspected in accordance with the regulation of the H. & T.P. Act, 1909 ...	3254
„ „ reinspected ...	37
„ „ on complaint ...	111
„ „ special inquiry ...	81
Visits <i>re</i> Infectious Diseases ...	337
Drains Inspected ...	229
Common Lodging-houses inspected ...	27
Common Yards, Courts, & Alleys inspected ...	7191
Schools inspected ...	30
Temporary or movable dwellings inspected ...	93
Public Halls ...	8
<b>TRADE PREMISES—</b>	
Bakelhouses ...	254
Laundries ...	20
Stables ...	44
Cowsheds } Milkshops }	118
Ice-Cream Shops ...	88
Fried Fish Shops ...	148
Food Manufactories ...	57
Slaughter-houses ...	169
Markets ...	166
Factories ...	146
Workshops and Workplaces ...	453
Chimneys observed (smoke nuisances) ...	16
Visits after serving notices to supervise works in progress ...	395
Refuse Tips ...	85
Shops Act Inspections ...	200
Visits in connection with various Food Orders	Numerous
Water samples taken for analysis ...	8
Miscellaneous inspections ...	98
<b>Notices served to abate Nuisances</b> ..	
„ complied with ...	355
„ not complied with ..	329
	26

### Remedial Works done by Notice.

Overcrowding Abated	...	...	...	...	4
Walls, Damp and Defective, Remedied	...	...	...	...	10
Roofs, Guttering, &c., Repaired	...	...	...	...	98
Yards Paved	...	...	...	...	7
Abatement of Nuisances caused by Animals and Birds	...	...	...	...	58
Water-closets Repaired	...	...	...	...	65
Flushing Apparatus Repaired	...	...	...	...	19
Drains Reconstructed	...	...	...	...	22
,, Tested	...	...	...	...	36
Accumulations of Manure Removed	...	...	...	...	19
Workshops Cleansed or Limewashed	...	...	...	...	4
Bakehouses Cleansed or Limewashed	...	...	...	...	13

I have the honour to be,

Your obedient Servant,

C. W. HILL.